L-95

Multimedia Enhanced

Whirlpool®

# SERVICE MANUAL

## 27”
## GAS & ELECTRIC STACKED LAUNDRY CENTER

W11197006

# FORWARD

This Service Manual, (Part No. W11197006), provides the In-Home Service Professional with service information for the “27” GAS & ELECTRIC STACKED LAUNDRY CENTER.”

The Wiring Diagram used in this Service Manual is typical and should be used for training purposes only. Always use the Wiring Diagram supplied with the product tech sheet when servicing the laundry center.

For specific operating and installation information on the model being serviced, refer to the “Use and Care Guide” or “Installation Instructions” provided with the product.

# GOALS AND OBJECTIVES

The goal of this Service Manual is to provide information that will enable the In-Home Service Professional to properly diagnose malfunctions and repair the “27” STACKED LAUNDRY CENTER.”

The objectives of this Service Manual are to:

- Understand and follow proper safety precautions.
- Successfully troubleshoot and diagnose malfunctions.
- Successfully perform necessary repairs.
- Successfully return the washer to its proper operational status.

WHIRLPOOL CORPORATION assumes no responsibility for any repairs made on our products by anyone other than authorized In-Home Service Professionals.

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**PRODUCT SPECIFICATIONS & WARRANTY INFORMATION SOURCES** (inside back cover)

# Section 1: General Information

This section provides general safety, parts, and information for the 27” Stacked Laundry Center.

- Washer Safety
- Product Information
- Control Panel and Features
- Using the Washer
- Model/Serial Number Location
- Tech Sheet Location
- Model & Serial Number Nomenclature
- Dimensions & Clearances
- Product Specifications

# Washer Safety

**Your safety and the safety of others are very important.**

We have provided many important safety messages in this manual and on your appliance. Always read and obey all safety messages.

This is the safety alert symbol.

This symbol alerts you to potential hazards that can kill or hurt you and others.

All safety messages will follow the safety alert symbol and either the word “DANGER” or “WARNING.” These words mean:

**⚠DANGER** — **You can be killed or seriously injured if you don't immediately follow instructions.**

**⚠WARNING** — **You can be killed or seriously injured if you don't follow instructions.**

All safety messages will tell you what the potential hazard is, tell you how to reduce the chance of injury, and tell you what can happen if the instructions are not followed.

# Product Information

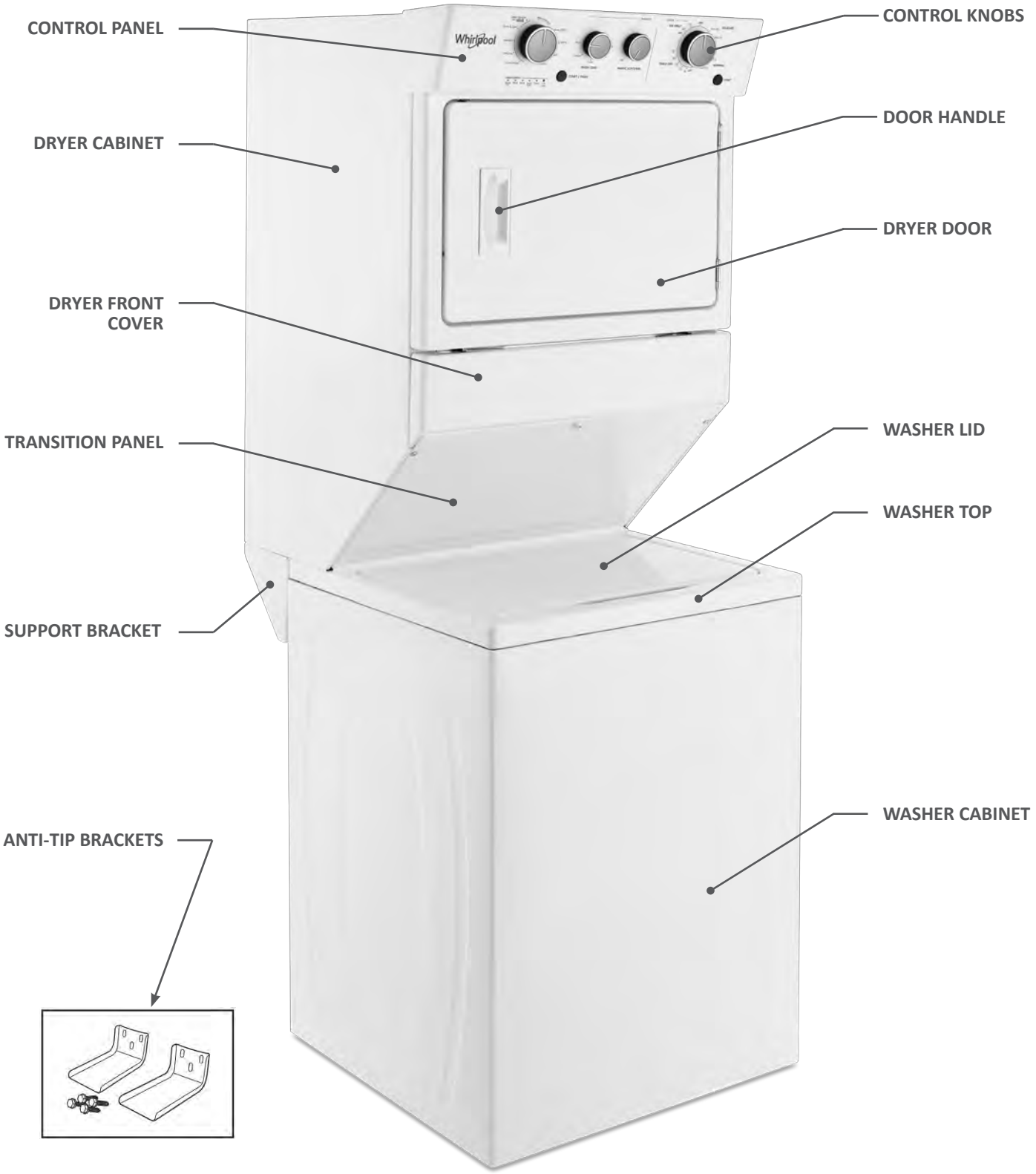
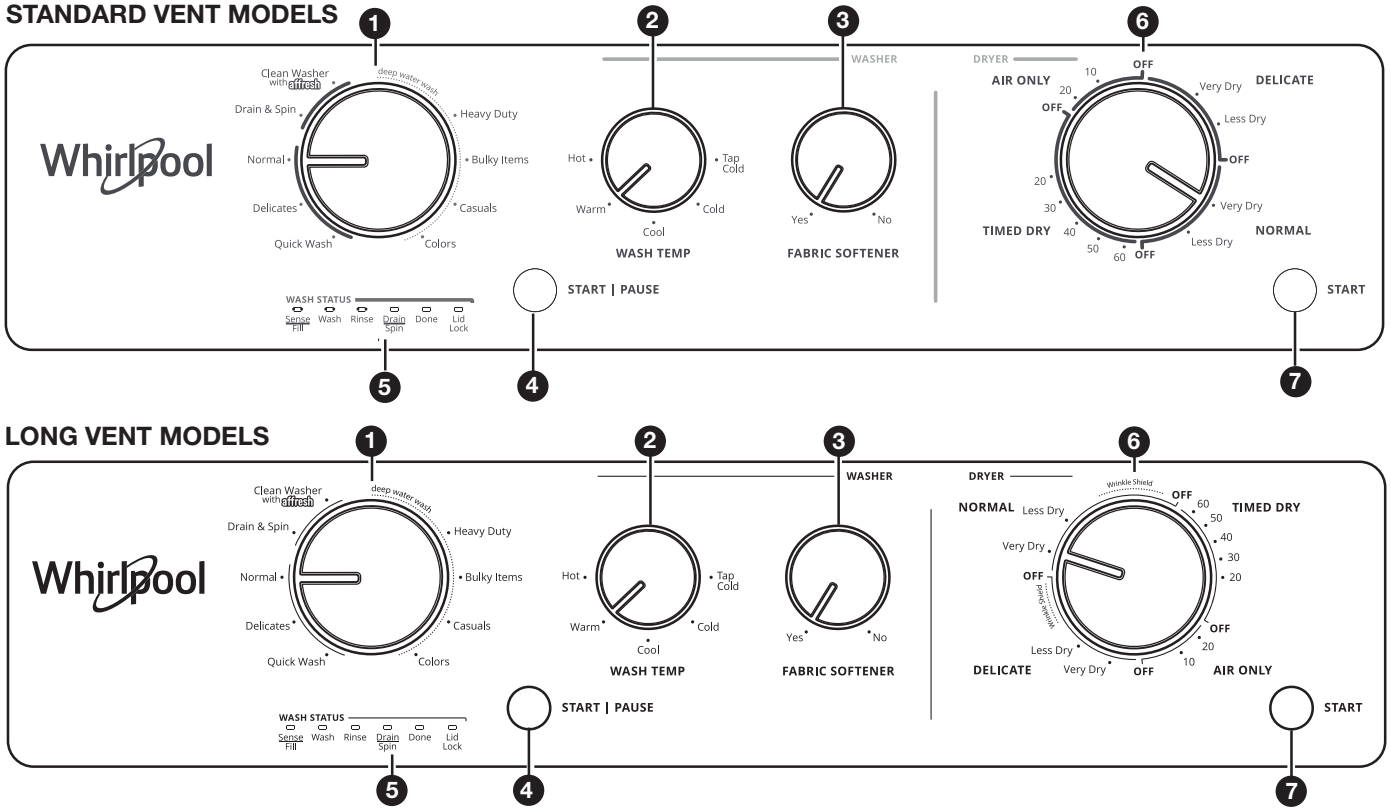



*Figure 1 - 27” Stacked Laundry Center*

# Control Panel and Features




Not all features and options are available on all models. Appearance may vary.

## Washer

1. **WASH CYCLE KNOB**

   Use the Wash Cycle knob to select available cycles on your washer. Turn the knob to select a cycle for your laundry load.

   See “Washer Cycle Guide” for detailed descriptions of cycles.

2. **WASH TEMP**

   You may select a Wash Temperature based on the type of fabric and soils being washed. Use the warmest wash water safe for the fabric. Follow garment label instructions.

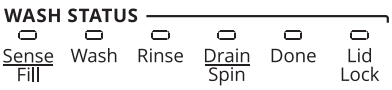
3. **FABRIC SOFTENER**

   Set this knob to Yes when adding fabric softener to the fabric softener dispenser.

4. **WASHER START/PAUSE**

   Press the START/PAUSE button to start the washer.

5. **WASH STATUS INDICATOR LIGHTS**




   The Cycle Status lights show the progress of a cycle. At each stage of the process, you may notice sounds or pauses that are different from your previous washer.

**SENSE/FILL**

When the Start/Pause button is pressed, the washer will fill and begin sensing to determine load size and balance. Once sensing is complete, the washer will fill to the appropriate level for the detected load size and then begin the wash phase of the cycle.

**NOTE:** Sensing and wash phases will be paused by opening the unlocked lid. Close the lid to resume the cycle. If the lid is left open for more than 10 minutes, the washer will cancel the cycle and pump out the water. The lid will lock after the wash phase to begin the initial spinout and remain locked for the remainder of the cycle.

**WASH**

The washer will fill to the correct water level based on the load size. Certain cycles may agitate during the fill process to boost cleaning. You will hear the agitator rotate, followed by a pause lasting several seconds. When the wash cycle begins, you will hear the agitator increase speed. The motor sounds may change at different stages in the wash cycle while the washer performs different wash actions.

**RINSE**

Certain cycles use a spray rinse, which adds water to the tub while the basket spins. You may hear the motor turning on briefly (short hum) to move the basket while filling.

**DRAIN/SPIN**

The washer spins the load at increasing speeds for proper water removal, based on the selected cycle.

# Control Panel and Features (continued)

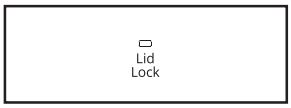
## Washer (continued)

**DONE**

Once the cycle is complete, this light will come on. Remove the load promptly for best results.

**LID LOCK**

The Lid Lock feature allows for higher spin speeds. When the Lid Lock light is lit, the lid is locked and cannot be opened without pausing the cycle. When the light is off, the lid can be opened.




To open the lid after it has been locked, press START/PAUSE. The lid will unlock once the washer movement has stopped. This may take several minutes if the load was spinning at high speed. Press START/PAUSE again to resume the cycle.

## Dryer

6. **DRYER CYCLE KNOB**

   Use your Dryer Cycle knob to select available cycles on your dryer. Turn the knob to select a cycle for your laundry load. See “Dryer Cycle Guide” for detailed descriptions of cycles.

   **TIMED DRY**

   Will run the dryer for the specified time on the control. Drying time and temperature will depend on your dryer model.

   **NORMAL and DELICATE CYCLES**

   These cycles sense moisture in the load or air temperature and shut off when the load reaches the selected dryness level. They give the best drying in the shortest time. Drying time will vary based on fabric type, load size, and dryness setting.

   **AIR ONLY**

   This cycle will run the dryer without heat for the specified time on the control.

7. **DRYER START BUTTON**

   The Start button is used to start the dryer. Promptly removing clothes at the end of the cycle reduces wrinkling.

# Using the Washer

## Add Laundry Products

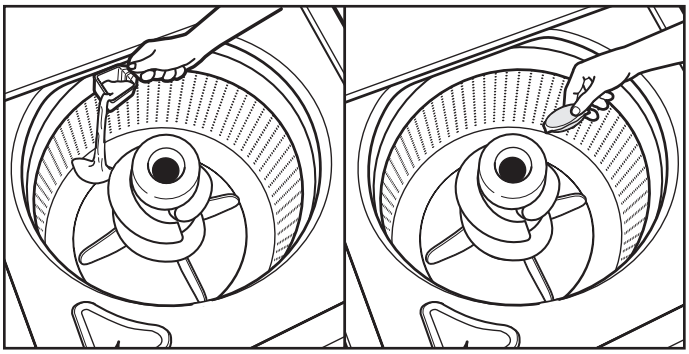


*Figure X*

Add a measured amount of HE detergent or single-dose laundry packet into the basket.

If using Oxi-type boosters, color-safe bleach, or fabric softener crystals, add to the bottom of the washer basket before adding clothes.

**IMPORTANT:** Use only High Efficiency detergents. The package will be marked “HE” or “High Efficiency.” Using non-HE detergent will likely result in longer cycle times and reduced rinsing performance. It may also result in component malfunction and, over time, buildup of mold or mildew. HE detergents should be low-sudsing and quick-dispersing to produce the right amount of suds for the best performance. They should hold soil in suspension so it is not redeposited onto clean clothes. Not all detergents labeled as High Efficiency are identical in formulation and their ability to reduce suds. For example, natural, organic, or homemade HE detergents may generate a high level of suds.

**NOTE:** Follow the manufacturer’s instructions to determine the amount of laundry products to use.

## Add Liquid Chlorine Bleach to Dispenser

Do not overfill, dilute, or use more than 1 cup (236 mL). Do not use color-safe bleach or Oxi products in the same cycle with liquid chlorine bleach.

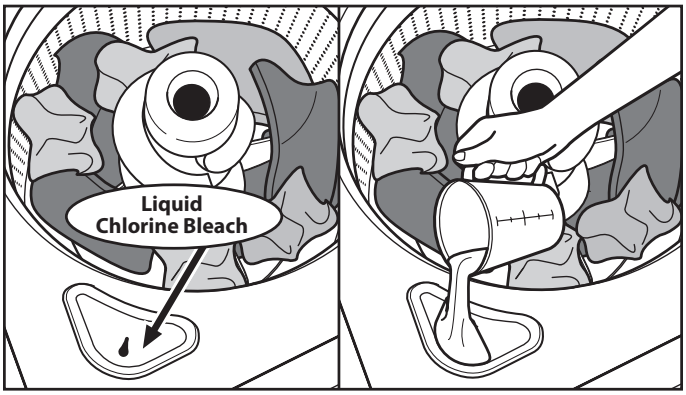



*Figure X*

## Add Fabric Softener to Dispenser

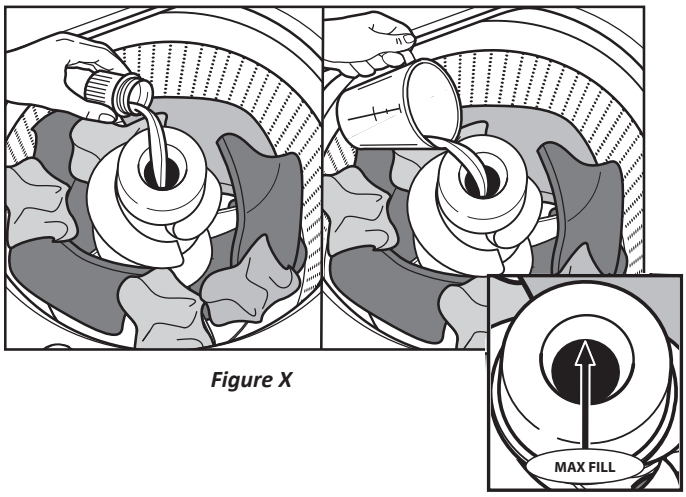



*Figure X*

Pour a measured amount of liquid fabric softener into dispenser; always follow manufacturer’s directions for correct amount of fabric softener based on your load size.

Dilute liquid fabric softener by filling the dispenser with warm water until liquid reaches the underside of the rim. See max fill line arrows. Do not overfill.

**Adding Liquid Fabric Softener Manually to Wash Load**

During the final rinse, wait until the washer has completed filling and press the START/PAUSE button to pause the washer. Lift the lid and add the measured recommended amount of liquid fabric softener. Do not allow liquid fabric softener to spill, splash, drip, or run into the basket or on load. Do not use more than the recommended amount. Close the lid and press the START/ PAUSE button again to start the washer.

# Model/Serial Number Label & Tech Sheet Location

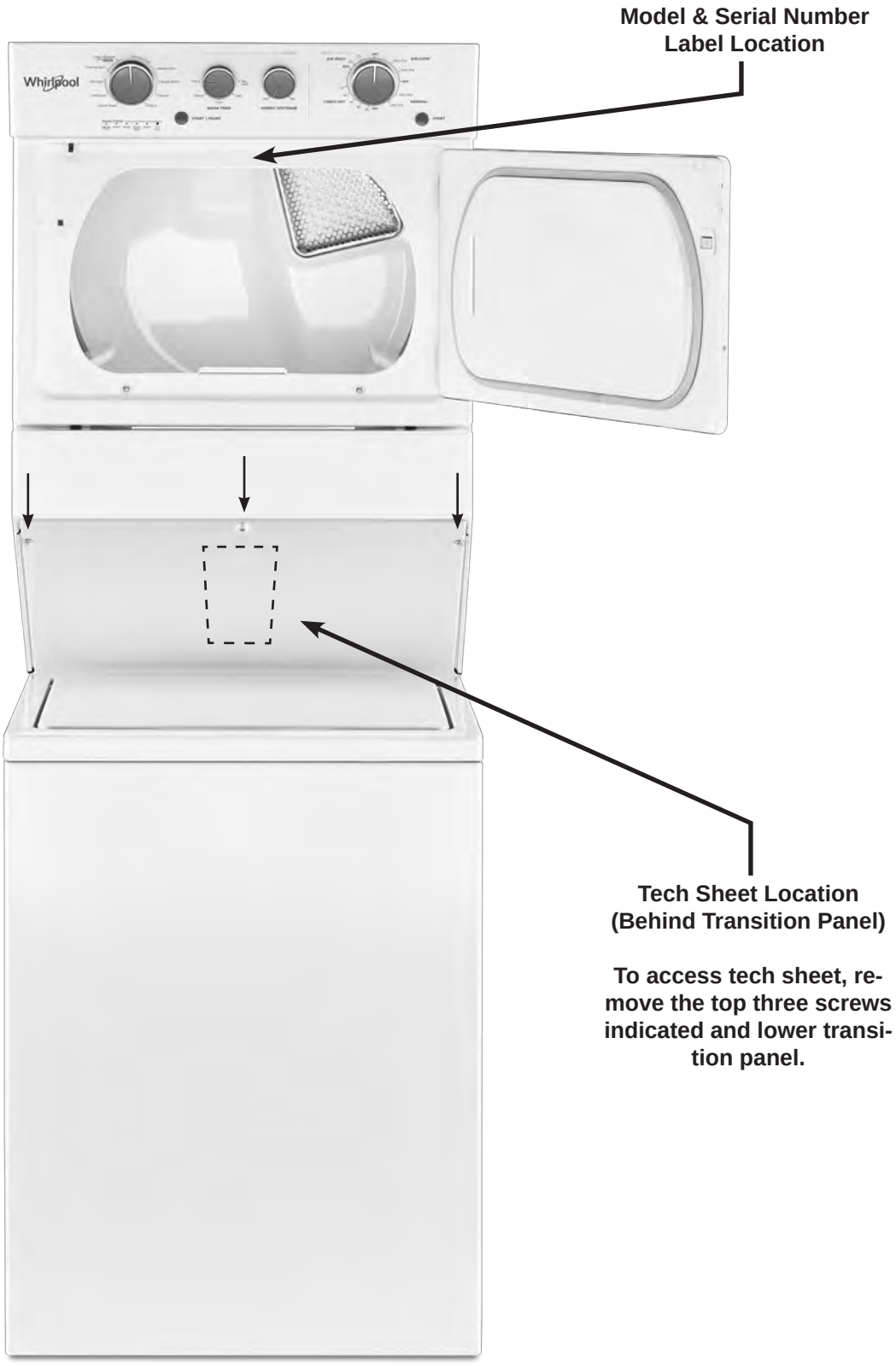



*Figure 9 - Tech Sheet Location*

# Model & Serial Number Nomenclature

| MODEL NUMBER | W | E | T | 40 | 27 | H | W | 0 |
|---|---|---|---|---|---|---|---|---|

**INTERNATIONAL SALES OR MARKETING CHANNEL**

**BRAND**
W = Whirlpool

**TYPE**
E = Electric, G = Gas

**ACCESS**
T = Top Load

**FEATURE SET**
40 = Standard Vent, LV = Long Vent

**SIZE**
27 = 27” Width

**YEAR OF INTRODUCTION**
H = 2018

**COLOR CODE**
W = White

**ENGINEERING CHANGE**
0 = Basic Release; 1 = First Revision; etc.

| SERIAL NUMBER | M | 7 | 25 | 10000 |
|---|---|---|---|---|

**PRODUCTION SITE**
M = Marion, OH

**YEAR OF PRODUCTION**
7 = 2017, 8 = 2018, etc.

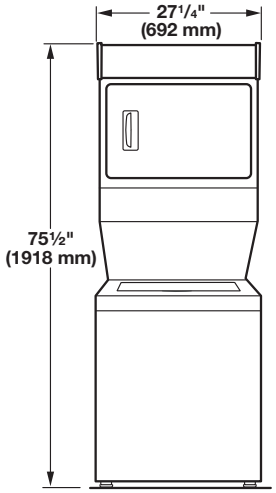
**WEEK OF PRODUCTION**

**PRODUCT SEQUENCE NUMBER**

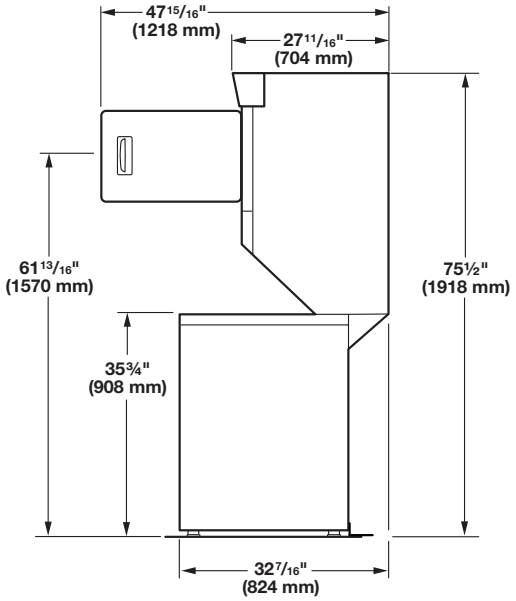
# Dimensions & Clearances

## Dimensions

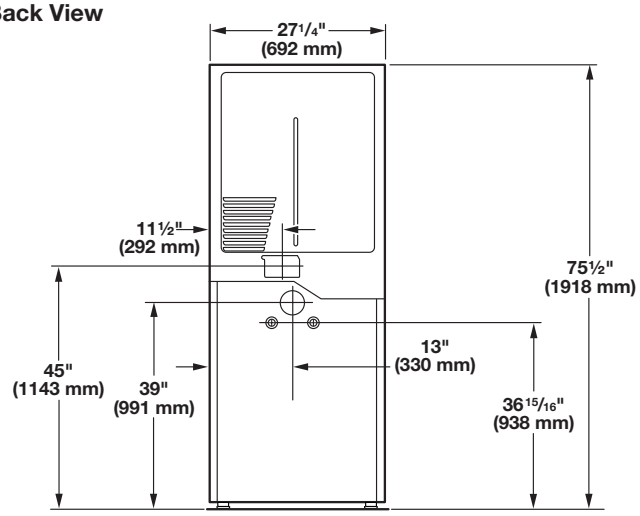
### Front View




### Side View

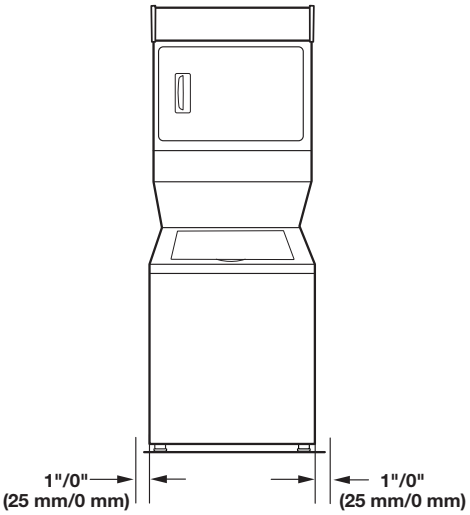



### Back View

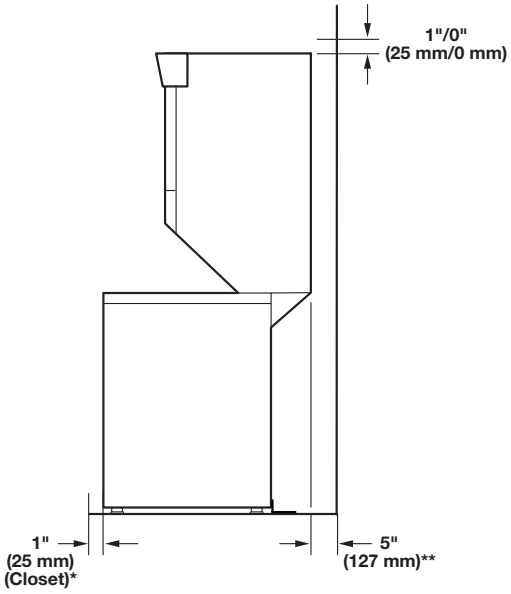



## Clearances

### Side Clearances (recommended/minimum)




### Front/Back/Top Clearances (recommended/minimum)




*Required spacing.

** Rear clearance may be 0" (0 mm) when house exhaust system is lined up directly with dryer exhaust.

# Product Specifications

| ELECTRICAL | |
|---|---|
| Line Voltage : | Electric = 240 VAC<br>Gas = 120 VAC |
| Frequency : | 57–63 Hz |
| Amps : | Electric - 30A<br>Gas = 15 - 20A |
| Operating Temperature Range : | 40–115°F (4.5–46°C) |

| UTILITIES | |
|---|---|
| Water Temp : | 120°F (49°C) |
| Water Pressure : | 15–125 PSI (103-862 kPa) |
| Drain Height : | 39 in. to 8 ft. (991 mm to 2.4 m) |

| WASHER DETAILS | |
|---|---|
| Capacity : | Washer = 3.5 Cu Ft |
| Motor Drive Type : | Washer = Belt |
| Drum Material : | Powder Coat |
| Control : | Washer = Electronic |
| Advanced Vibration Control : | Yes |
| Automatic Load Size Sensing : | Yes |
| Cycles : | (9) Bulky Items, Casual, Clean Washer, Colors, Delicates, Drain & Spin, Heavy Duty, Normal, Quick Wash |
| Wash/Rinse Temperatures : | (5) Cold, Cool, Hot, Tap Cold, Warm |
| Extra Rinse : | Yes |
| Spin : | Maximum Spin Speed (RPM) 690 |
| Suspension System : | Suspended Tub - 4 Springs |

| DRYER DETAILS | |
|---|---|
| Capacity : | Dryer = 5.9 Cu Ft |
| Motor Drive Type : | Dryer = Belt |
| Drum Material : | Powder Coat |
| Control : | Dryer = Timer |
| Moisture Sensor : | Yes (Long Vent Only) |
| Dryer Cycles : | 4 |
| Venting : | Rear Venting Only |

| DIMENSIONS | |
|---|---|
| Depth : | 32 7/16” (824mm) |
| Height : | 75 1/2” (1918mm) |
| Width : | 27 1/4” (692mm) |
| Net Weight : | 250 lbs. (113.4kg) |

# Section 2: Diagnostics & Troubleshooting

This section provides diagnostic, fault codes, and troubleshooting information for the 27” Stacked Laundry Center.

**WASHER & DRYER**

- Diagnostic Guide

**WASHER ASSEMBLY**

- Diagnostic LED - Main Control (Washer)
- Self Diagnostic Test Modes (Washer)
- Activating the Service Diagnostic Test Mode (Washer)
- Unsuccessful Entry
- Exiting the Service Diagnostic Test Modes
- Fault Code Display Mode
- Automatic Test Mode
- Manual Test Mode
- Calibration Mode
- UI Test Mode
- Software Version Display Mode
- Tachometer Verification Mode
- Customer Viewable Fault Codes (Washer)
- Fault/Error Codes (Washer)
- Troubleshooting Guide (Washer)

**DRYER ASSEMBLY**

- Troubleshooting Guide (Dryer)
- Notes

# For Service Technician Use Only

## Diagnostic Guide

Before servicing, check the following:

- Make sure there is power at the wall outlet.
- Has a household fuse blown or circuit breaker tripped? Was a regular fuse used? Inform customer that a time-delay fuse is required.
- Is dryer vent properly installed and clear of lint or obstructions?
- Are both hot and cold water faucets open and water supply hoses unobstructed?
- Make sure drain hose is not sealed into drain pipe, and that there is an air gap for ventilation. Ensure drain height is between 39" (991 mm) and 8' (2.4 m) above the floor.
- All tests/checks should be made with a VOM (volt-ohm-milliammeter) or DVM (digital-voltmeter) having a sensitivity of 20,000 Ω per volt DC or greater.
- Resistance checks must be made with washer unplugged or power disconnected.
- **IMPORTANT**: Avoid using large diameter probes when checking harness connectors as the probes may damage the connectors upon insertion.
- Check all harnesses and connections before replacing components. Look for connectors not fully seated, broken or loose wires and terminals, or wires not pressed into connectors far enough to engage metal barbs.
- A potential cause of a control not functioning is corrosion or contamination on connections. Use an ohmmeter to check for continuity across suspected connections.

## Diagnostic LED–Main Control (Washer)

A troubleshooting tool has been implemented onto the main control board—a diagnostic LED.

**LED ON** – The Control is detecting correct incoming line voltage and the processor is functioning.

**LED OFF** – Control malfunction. Perform TEST #1: Main Control, page 3-5, to verify main control functionality.

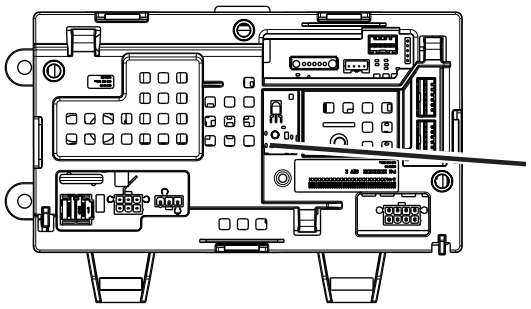



*Figure 1*

## Self Diagnostic Test Modes (Washer)

These tests allow factory or service personnel to test and verify all inputs to the main control board. You may want to do a quick and overall checkup of the washer with these tests before going to specific troubleshooting tests.

## ACTIVATING THE SERVICE DIAGNOSTIC TEST MODES (WASHER)

1. Be sure the washer/dryer is in standby mode (plugged in with all indicators off). **NOTE**: After initial power is applied, wait 10 seconds before activating Service Diagnostic Test Modes.
2. Perform the following sequence of movement using the cycle selector knob. **NOTE: AFTER RESET,** sequence "a" through "e" must be completed within **6 seconds**.

**RESET -** Rotate cycle selector knob **counterclockwise** one or more clicks to clear sequence.

a. Rotate cycle selector knob **clockwise** one click and wait ½ second.

b. Rotate cycle selector knob **clockwise** one click and wait ½ second.

c. Rotate cycle selector knob **clockwise** one click and wait ½ second.

d. Rotate cycle selector knob **counterclockwise** one click and wait ½ second.

e. Rotate cycle selector knob **clockwise** one click.

➢ Successful activation of Diagnostic Test Modes will be indicated by all status LEDs (except for Lid Lock) flashing ON and OFF in half-second intervals. **NOTE**: LED names may vary between makes and models.

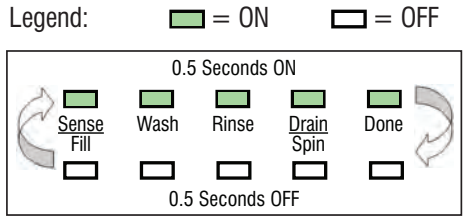



***Figure 2 - Status LEDs flashing ON and OFF***

➢ If the status LEDs do not display as described above, the sequence may not have been completed within 6 seconds. Repeat step 2 to ensure this was not the cause. If still unsuccessful, see Unsuccessful Entry, page 2-3.

# For Service Technician Use Only

3. There are several accessible Diagnostic Test Modes shown in the chart below. To select the desired Mode of Operation, turn the cycle selector knob until the status LEDs match the mode desired to enter.

| DIAGNOSTIC TEST MODES | | | | | |
|---|---|---|---|---|---|
| MODE | STATUS LEDs | | | | DISPLAY |
| (Status LED names may vary between makes and models) | WASH | RINSE | DRAIN / SPIN | DONE | (Only on models with a display) |
| Fault Code Display Mode | | | | ■ | 01 |
| Automatic Test Mode | | | ■ | | 02 |
| Manual Test Mode | | | ■ | ■ | 03 |
| Calibration Mode | | ■ | | | 04 |
| Sales Demo Mode | | ■ | | ■ | 05 |
| UI Test Mode | | ■ | ■ | | 06 |
| SW Version Display Mode | | ■ | ■ | ■ | 07 |
| Factory Diagnostics Mode | ■ | | | | 08 |
| Tachometer Verification | ■ | | | ■ | 09 |
| Dry Factory Diagnostics | ■ | | ■ | | 10 |
| Factory Cal Test Cycle | ■ | | ■ | ■ | 11 |
| AATCC Cycle | ■ | ■ | ■ | | 14 |
| NVH Cycle | ■ | ■ | ■ | ■ | 15 |

4. Press the **START** button to enter desired mode of operation.

   Refer to the following pages for detailed information on each mode of operation:

   - **FAULT CODE DISPLAY MODE:** Page 2-3
   - **AUTOMATIC TEST MODE:** Page 2-4
   - **MANUAL TEST MODE:** Page 2-4
   - **CALIBRATION MODE:** Page 2-4
   - **SALES DEMO:** NOT FOR SERVICE USE*
   - **UI TEST MODE:** Page 2-4
   - **SW VERSION DISPLAY MODE:** Page 2-5
   - **FACTORY DIAGNOSTICS:** NOT FOR SERVICE USE.* If accessed, washer must be recalibrated (see Calibration Mode)
   - **TACHOMETER VERIFICATION MODE:** Page 2-5
   - **DRY FACTORY DIAGNOSTICS:** NOT FOR SERVICE USE*
   - **FACTORY CAL TEST CYCLE:** NOT FOR SERVICE USE*
   - **AATCC CYCLE:** NOT FOR SERVICE USE*
   - **NVH CYCLE:** NOT FOR SERVICE USE*

*Press and hold START for 3 seconds to exit.

## Unsuccessful Entry

If entry into diagnostic test mode is unsuccessful, refer to the following indication and action:

**Indication:** None of the LEDs turn on.

**Action:** Press **START** button to enter setting mode.

- ➢ If indicators come on, repeat steps 1 through 4 of Activating the Service Diagnostic Modes. **NOTE**: Rotating the dial too fast or too slow will affect entry.
- ➢ If no indicators come on after pressing the START button, go to TEST #1, page 3-5.

## EXITING THE SERVICE DIAGNOSTIC TEST MODES (WASHER)

Press and hold the START button for 3 seconds at any time to exit diagnostic test modes.

Washer will exit diagnostic test modes after 5 minutes of inactivity or unplugging the power cord.

## Fault Code Display Mode (Pgs 2-6 to 2-9)

To access fault/error codes, perform steps 1 and 2 of Activating the Service Diagnostic Test Modes. Turn the cycle selector knob until the status LEDs correspond as follows:

- "Done" LED On

Press the **START** button to enter Fault Code

Display Mode. The status LEDs flash on and off.

1. To view last four fault codes:
   - ➢ Turn cycle selector knob clockwise to view fault codes in the order of most recent to oldest. (Refer to Fault/ Error Code charts on pages 2-6 to 2-7.) **NOTE**: A fault/error code will be removed from memory if it does not reoccur after 10 consecutive wash cycles.
2. To clear fault codes:
   - ➢ Turn cycle selector knob until the status LEDs flash ON and OFF (see figure 2, page 2-2).
   - ➢ Press and hold the **START** button for 3 seconds to clear all fault codes and exit Fault Code Display Mode.

### Fault/Error Code Display Method

Fault/error codes are displayed by alternating the state of the Status LEDs in one second intervals. All fault/error codes have an F# and an E#. The F# indicates the suspect System/Category and the E# indicates the suspect Component system.

If the Sense/Fill LED is **ON**, the **Fault Number** is represented; if **OFF**, the **Error Number** is represented (see example below). The remaining LEDs (Wash, Rinse, Drain/Spin, and Done) represent the fault and error code in binary. (See Fault/Error Code Charts on pages 2-6 to 2-7 for more information.)

■ = ON.

| Frame Number | STATUS LEDs | | | | | Fault / Error Code | Frame Timing (sec.) |
|---|---|---|---|---|---|---|---|
| | SENSE / FILL | WASH | RINSE | DRAIN / SPIN | DONE | | |
| 1 | F | 8 | 4 | 2 | 1 | F2 | 0.5 |
| 2 | | | | | | | 0.5 |
| 3 | E | 8 | 4 | 2 | 1 | E3 | 0.5 |
| 4 | | | | | | | 1.0 |
| Repeat... | | | | | | | |

LED names may vary between makes and models.

# For Service Technician Use Only

## Automatic Test Mode (Page 2-10)

To access Automatic Test Mode, perform steps 1 and 2 of Activating the Service Diagnostic Test Modes. Turn the cycle selector knob until the status LEDs correspond as follows:

- "Drain/Spin" LED On

**NOTE:** Status LED names may vary between makes and models.

Press the **START** button to begin the automatic test. See page 2-10 for order of automatic test.

- Upon entering the automatic test mode, the washer will perform an automatic test with water cycles to check major washer functions.
- Pressing the START button will manually advance to the next step.
- Press and hold the START button for 3 seconds at any time to exit Automatic Test mode.

**IMPORTANT:** Lid must be closed with lid lock enabled to perform test.

## Manual Test Mode (Page 2-11)

To access Manual Test Mode, perform steps 1 and 2 of Activating the Service Diagnostic Test Modes. Turn the cycle selector knob until the status LEDs correspond as follows:

- "Drain/Spin" & "Done" LEDs On

- Press the **START** button to enter Manual Test Mode. See page 2-11 for manual test mode.
- Upon entering the manual test mode, the washer will have all outputs OFF.
- The cycle selector knob is used to select the output to be tested.
- The Start button will activate/deactivate the selected output.
- When the selected output is activated, the corresponding status LEDs flash ON & OFF.
- Press and hold the **START** button for 3 seconds at any time to exit Manual test mode.

**IMPORTANT:** As a safety feature, the lid must be closed with lid lock enabled to activate either Agitate or Spin Test.

**NOTE:** Multiple outputs may be activated simultaneously.

**NOTE:** Outputs left on will time-out after 5 minutes.

## Calibration Mode

**NOTE:** Calibration only applies to models that do not have level selection.

**IMPORTANT:** Calibration must be performed when any of the following components have been replaced: Main Control, Basket, Drive Assembly, Suspension, Motor, and Capacitor. Not performing calibration will result in poor wash performance.

- Do **NOT** interrupt calibration, disturb washer, or remove power; otherwise, calibration must be repeated.
- Lid must be down to perform test.
- Basket must be empty to perform test (no water or clothes).
- Calibration cycle runs for approximately 2–4 minutes.* Cycle completes when lid unlocks and washer enters standby mode.

  *If Calibration Mode is run on a washer with a porcelain basket, the time necessary to complete the calibration may be longer.

**NOTE:** Before beginning calibration, check the drive system to verify that the cam on the splutch is moving freely and not binding.

To access Calibration Mode, perform steps 1 and 2 of Activating the Service Diagnostic Test Modes. Turn the cycle selector knob until the status LEDs correspond as follows:

- "Rinse" LED On

**NOTE:** Status LED names may vary between makes and models.

Press the **START** button to begin washer calibration. All status LEDs will turn on.

## UI Test Mode

To access UI (User Interface) Test Mode, perform steps 1 and 2 of Activating the Service Diagnostic Test Modes. Turn the cycle selector knob until the status LEDs correspond as follows:

- "Rinse" & "Drain/Spin" LEDs On

**NOTE:** Status LED names may vary between makes and models. Use LED # identifications.

Press the **START** button to begin the UI test.

- Upon entering the UI test mode, all status LEDs will be turned ON.
- Pressing the Start button will turn on and off all status LEDs, or toggle the state of each status LED independently. (Example: if 2 are on, and 3 are off, then 2 will be turned off and 3 turned on.)

# For Service Technician Use Only

- When rotating the cycle selector knob, each click "indent" toggles the "Done" (5) LED.
- Turning the rotary switches will toggle the following status LEDs on and off.
  - Rotary Switch #1 – toggles (1) Sense/Fill LED
  - Rotary Switch #2 – toggles (2) Wash LED
  - Rotary Switch #3 – toggles (3) Rinse LED
  - Rotary Switch #4 – toggles (4) Drain/Spin LED

**NOTE:** The number and location of rotary switches varies between makes and models. Switches are read from left to right, the leftmost switch being #1.

- Press and hold the **START** button for 3 seconds at any time to exit UI test mode.
- Washer will exit UI test mode after 5 minutes of inactivity or unplugging the power cord.

## Software Version Display Mode

To access Software Version Display Mode, perform steps 1 and 2 of Activating the Service Diagnostic Test Modes. Turn the cycle selector knob until the status LEDs correspond as follows:

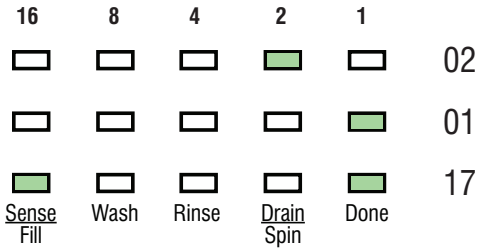
- "Rinse," "Drain/Spin," and "Done" LEDs On

**NOTE:** Status LED names may vary between makes and models.

Press the **START** button to begin software display mode.

- Upon entering the software version display mode, the Major, Minor, and Test version numbers for the software are displayed by alternating the state of the Status LEDs in one second intervals; the process repeats following a pause.

  For example, if the s/w version is 02.01.17, the following sequence would be displayed:




- Press and hold the **START** button for 3 seconds at any time to exit software version display mode.

## Tachometer Verification Mode

To access Tachometer Verification Mode, perform steps 1 and 2 of Activating the Service Diagnostic Modes. Turn the cycle selector knob until the status LEDs correspond as follows:

- "Wash" and "Done" LEDs On

**NOTE:** Status LED names may vary between makes and models.

Press the **START** button to begin tachometer verification mode.

- Tachometer verification uses the status LEDs to represent the tachometer frequency (basket RPM).

  For example, **slowly** turn the basket by hand; as the basket turns, the DONE, DRAIN/SPIN, RINSE, and WASH status LEDs will illuminate one at a time in a visually repeating cycle. The LED timing is derived from the tachometer signal itself.

- Press and hold the **START** button for 3 seconds at any time to exit tachometer verification mode.

## Customer Viewable Fault Codes (Washer)

There are three fault codes that may be visible to the customer indicated by the following Status LEDs:

- WASH LED ON (Long Fill Fault) – Refer to "No Fill, Long Fill" on page 2-8 for information.
- DRAIN/SPIN LED ON (Long Drain Fault) – Refer to "Long Drain" on page 2-9 for information.
- LID LOCK LED FLASHING CONTINUOUSLY (Lid Lock Fault) – Run TEST #3: Drive System on page 3-8. According to the result, refer to "Basket Speed Fault," "Shifter Fault," "Motor Fault," or "Motor Unable to Reach Target RPM" on page 2-8. Finally, refer to "Lid Lock Fault" on page 2-7.

## FOR SERVICE FAULT AND ERROR CODES, CONTINUE TO PAGES 2-6 TO 2-9

# For Service Technician Use Only

**⚠ WARNING**

**Electrical Shock Hazard**

**Disconnect power before servicing.**

**Replace all parts and panels before operating.**

**Failure to do so can result in death or electrical shock.**

## Fault/Error Codes (Washer)

See page 2-3 to access Fault Code Display Mode.

* If the Sense/Fill LED is ON, the fault code is represented; if OFF, the error code is represented.

= ON

| FAULT/ERROR CODE - DESCRIPTION | FAULT NUMBER | | | | | ERROR NUMBER | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Status LEDs | | | | | Status LEDs | | | | |
| Explanation & Recommended Procedure (Status LED names may vary between makes and models) | SENSE FILL | WASH | RINSE | DRAIN SPIN | DONE | SENSE FILL | WASH | RINSE | DRAIN SPIN | DONE |
| **F0E0 - NO FAULT** | On | 8 | 4 | 2 | 1 | Off | 8 | 4 | 2 | 1 |
| **F0E2 - OVERSUDS CONDITION DETECTED** | F | | | | | E | | | 2 | |
| Fault is displayed when suds prevent the basket from spinning up to speed or the pressure sensor detects rising suds level. The main control will flush water in attempt to clear suds. If the water flush is unable to correct the problem, this may indicate:<br>• Not using HE detergent.<br>• Excessive detergent usage.<br>• Check pressure hose connection from tub to pressure sensor. Is hose pinched, kinked, plugged, or leaking air?<br>• Mechanical friction on drive mechanism or basket (clothing between basket and tub). | | | | | | | | | | |
| **F0E4 – HIGH WATER TEMPERATURE – RINSE CYCLE** | F | | | | | E | | 4 | | |
| Fault is displayed when washer detects water temperature 105°F (40°C) or higher during rinse cycle.<br>• Hot water getting in. Make sure inlet hoses are connected correctly. | | | | | | | | | | |
| **F0E5 – OFF BALANCE LOAD DETECTED** | F | | | | | E | | 4 | | 1 |
| Fault is displayed when an off balance condition is detected.<br>• Check for weak suspension. Basket should not bounce up and down more than once when pushed.<br>• Clothing should be distributed evenly when loading. | | | | | | | | | | |
| **F1E1 – MAIN CONTROL FAULT** | F | | | | 1 | E | | | | 1 |
| Indicates a main control fault.<br>• See TEST #1: Main Control, page 3-5. | | | | | | | | | | |
| **F1E2 – MOTOR CONTROL FAULT** | F | | | | 1 | E | | | 2 | |
| Indicates a fault of the motor control section of the main control.<br>• See TEST #3b: Drive System – Motor, page 3-10. | | | | | | | | | | |
| **F2E1 – STUCK KEY** | F | | | 2 | | E | | | | 1 |
| One or more keys on the User Interface were actuated for 15 consecutive seconds.<br>• Fault occurs during Diagnostic Test Mode if a stuck key is detected.<br>• See TEST #4: Console and Indicators, page 3-12. | | | | | | | | | | |

*Continued on next page . . .*

# For Service Technician Use Only

## Fault/Error Codes (Washer) Continued

| FAULT/ERROR CODE - DESCRIPTION | FAULT NUMBER | | | | | ERROR NUMBER | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Status LEDs | | | | | Status LEDs | | | | |
| Explanation & Recommended Procedure<br>(Status LED names may vary between makes and models) | SENSE FILL | WASH | RINSE | DRAIN SPIN | DONE | SENSE FILL | WASH | RINSE | DRAIN SPIN | DONE |
| **F2E3 – SWITCH MISMATCH** | F | 8 | 4 | 2 | 1 | E | 8 | 4 | 2 | 1 |
| The switches do not match the console or are not operating correctly.<br>• Fault occurs during Diagnostic Test Mode if a switch mismatch is detected.<br>• See TEST #4: Console and Indicators, page 3-12. | | | | | | | | | | |
| **F3E1 – PRESSURE SYSTEM FAULT** | F | | | 2 | 1 | E | | | | 1 |
| Fault is displayed when the Main Control detects an out of range pressure signal.<br>• Check pressure hose connection from tub to pressure sensor. Is hose pinched, kinked, plugged, or leaking air?<br>• See TEST #5: Water Level, page 3-13. | | | | | | | | | | |
| **F5E1 – LID SWITCH FAULT** | F | | 4 | | 1 | E | | | | 1 |
| Fault is displayed if lid is in locked state, but lid switch is open; control not sensing the strike in the lid lock.<br>• User presses Start with lid open.<br>• The main control cannot detect the lid switch opening and closing properly.<br>• Strike not assembled correctly on the lid.<br>• Lid lock bezel not installed correctly (must be square to embossing and flush to top).<br>• See TEST #7: Lid Lock, page 3-15. | | | | | | | | | | |
| **F5E2 – LID LOCK FAULT** | F | | 4 | | 1 | E | | | 2 | |
| Fault is displayed if lid lock has not moved into locked position or motor cannot be powered.<br>• Lid is not closed completely due to interference.<br>• Check for lock interference with lock striker.<br>• Wash media buildup (detergent, lint, etc.) is preventing the lock mechanism from sliding.<br>• Main control detects open lid switch when attempting to lock.<br>• Main control cannot determine if lid lock is in a locked state.<br>• See TEST #7: Lid Lock, page 3-15. | | | | | | | | | | |
| **F5E3 – LID UNLOCK FAULT** | F | | 4 | | 1 | E | | | 2 | 1 |
| Fault is displayed if lid lock has not moved into unlocked position or motor cannot be powered.<br>• Check for lock interference with lock striker.<br>• Main control cannot determine if lid lock is in an unlocked state.<br>• See TEST #7: Lid Lock, page 3-15. | | | | | | | | | | |
| **F5E4 – LID NOT OPENED BETWEEN CYCLES** | F | | 4 | | 1 | E | | 4 | | |
| Fault is displayed if the following conditions occur:<br>• User presses Start after several consecutive washer cycles without opening lid.<br>• See TEST #7: Lid Lock, page 3-15. | | | | | | | | | | |

*Continued on next page . . .*

# For Service Technician Use Only

## Fault/Error Codes (Washer) Continued

| FAULT/ERROR CODE - DESCRIPTION | FAULT NUMBER | | | | | ERROR NUMBER | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Status LEDs | | | | | Status LEDs | | | | |
| Explanation & Recommended Procedure<br>(Status LED names may vary between makes and models) | SENSE FILL | WASH | RINSE | DRAIN SPIN | DONE | SENSE FILL | WASH | RINSE | DRAIN SPIN | DONE |
| **F7E1 – BASKET SPEED FAULT** | F | | 4 | 2 | 1 | E | | | | 1 |
| Fault is displayed when the main control cannot determine speed of basket, or speed changes too quickly.<br>• See TEST #3: Drive System, page 3-8.<br>• Calibration - run Calibration Mode, page 2-4.<br>• Locked rotor - check that basket, impeller, and motor can rotate freely.<br>• Check harness connections from main control to motor and shifter.<br>• See TEST #3a: Drive System-Shifter, page 3-8.<br>• Control not sensing the basket move in spin—run Tachometer Verification Mode, page 5.<br>• Bad motor capacitor, motor or capacitor connector disconnected, or broken wires to motor or capacitor.<br>• Belt is off or pulley is loose—check drive belt. Verify that belt is fully installed on both pulleys. Also, check that the pulleys are fastened securely to the motor shaft and agitator shaft.<br>• See TEST #3b: Drive System–Motor, page 3-10.<br>• For more details, see document W10606242. | | | | | | | | | | |
| **F7E5 – SHIFTER FAULT** | F | | 4 | 2 | 1 | E | | 4 | | 1 |
| Fault is displayed when the main control cannot determine position of shifter.<br>• See TEST #3: Drive System, page 3-8.<br>• Check harness connections from main control to motor and shifter.<br>• Observe shifter operation.<br>• See TEST #3a: Drive System–Shifter, page 3-8. | | | | | | | | | | |
| **F7E6 – MOTOR FAULT** | F | | 4 | 2 | 1 | E | | 4 | 2 | |
| Indicates an open clockwise or counterclockwise circuit of the motor.<br>• See TEST #3: Drive System, page 3-8.<br>• See TEST #3b: Drive System–Motor, page 3-10. | | | | | | | | | | |
| **F7E7 – MOTOR UNABLE TO REACH TARGET RPM** | F | | 4 | 2 | 1 | E | | 4 | 2 | 1 |
| Fault is displayed when basket speed sensor detects that target RPM was not reached.<br>• See TEST #3: Drive System, page 3-8.<br>• Mechanical friction on drive mechanism or basket (clothing between basket and tub).<br>• Weak motor or run capacitor, or no connection to run capacitor.<br>• Load off balance. Clothing should be distributed evenly when loading.<br>• See TEST #3b: Drive System–Motor, page 3-10. | | | | | | | | | | |
| **F8E1 – NO FILL, LONG FILL** | F | 8 | | | | E | | | | 1 |
| Fault is displayed when the water level does not change for a period of time OR water is present but main control does not detect the water level changing.<br>• Is water supply connected and turned on?<br>• Low water pressure; fill times longer than six minutes. Are hose screens plugged?<br>• Check for proper drain hose installation. Is water siphoning out of the drain hose?<br>• Drain hose must not be more than 4.5” (114 mm) into the drain pipe.<br>• Check pressure hose connection from tub to pressure sensor. Is hose pinched, kinked, plugged, or leaking air?<br>• See TEST #2: Valves, page 3-7. | | | | | | | | | | |

*Continued on next page . . .*

# For Service Technician Use Only

## Fault/Error Codes (Washer) Continued

| FAULT/ERROR CODE - DESCRIPTION | FAULT NUMBER | | | | | ERROR NUMBER | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Status LEDs | | | | | Status LEDs | | | | |
| Explanation & Recommended Procedure<br>(Status LED names may vary between makes and models) | SENSE FILL | WASH | RINSE | DRAIN SPIN | DONE | SENSE FILL | WASH | RINSE | DRAIN SPIN | DONE |
| **F8E3 – OVERFLOW CONDITION** | F | 8 | | | | E | | | 2 | 1 |
| Fault is displayed when main control senses water level that exceeds the washer's capacity.<br>• May signify problem with inlet water valves.<br>• Check pressure hose connection from tub to pressure sensor. Is hose pinched, kinked, plugged, or leaking air?<br>• Onboard pressure transducer fault.<br>• Check for proper drain hose installation. Is water siphoning out of the drain hose? Drain hose must not be more than 4.5" (114 mm) into the drain pipe. Make sure drain hose is not seated into drain pipe, and that there is an air gap for ventilation. Ensure drain height is between 39" (991 mm) and 8' (2.4 m) above the floor.<br>• See TEST #2: Valves, page 3-7 and TEST #5: Water Level, page 3-13. | | | | | | | | | | |
| **F8E5 – HOT, COLD REVERSED** | F | 8 | | | | E | | 4 | | 1 |
| Fault is displayed when the hot and cold inlet hoses are reversed.<br>• Make sure inlet hoses are connected correctly.<br>• See TEST #2: Valves, page 3-7. | | | | | | | | | | |
| **F9E1 – LONG DRAIN** | F | 8 | | | 1 | E | | | | 1 |
| Fault is displayed when the water level does not change after the drain pump is on for 10 minutes.<br>• Is the drain hose or the drain pump clogged? Check tub sump under impeller for obstructions.<br>• Is the drain hose height greater than 8' (2.4 m)?<br>• Too much detergent.<br>• Check pressure hose connection from tub to pressure sensor. Is hose pinched, kinked, plugged, or leaking air?<br>• Is the pump running? If not, see TEST #6: Drain Pump, page 3-14. | | | | | | | | | | |

# For Service Technician Use Only

## Automatic Test Mode (Washer) - See page 2-4 to access Automatic Test Mode.

Press the **START** button to begin the Automatic Test.
**IMPORTANT**: Lid must be closed and locked to perform Automatic Test.

= ON

| FUNCTION | STATUS LEDs | | | | | EST. TIME |
|---|---|---|---|---|---|---|
| Recommended Procedure<br>(Status LED names may vary between makes and models) | WASH | RINSE | DRAIN SPIN | DONE | LID LOCK | In Seconds |
| **LID WILL LOCK** | | | | 1 | On | 1 |
| Motor must be at "0" RPM. If lid does not lock, go to Manual Test: Lid Lock, page 2-11. | | | | | | |
| **COLD VALVE WILL ACTUATE** | | | 2 | | On | 5 |
| If water is not present, go to Manual Test: Cold Valve, page 2-11. | | | | | | |
| **HOT VALVE WILL ACTUATE** | | | 2 | 1 | On | 5 |
| If water is not present, go to Manual Test: Hot Valve, page 2-11. | | | | | | |
| **RESERVED FOR FUTURE DEVELOPMENT** | | 4 | | | On | 5 |
| Washer will pause for 5 seconds. | | | | | | |
| **RESERVED FOR FUTURE DEVELOPMENT** | | 4 | | 1 | On | 5 |
| Hot water valve will actuate for the specified time period. | | | | | | |
| **RESERVED FOR FUTURE DEVELOPMENT** | | 4 | 2 | | On | 5 |
| Cold water valve will actuate for the specified time period. | | | | | | |
| **HOT & COLD VALVE WILL ACTUATE** | | 4 | 2 | 1 | On | 45 |
| Hot & cold water valves will actuate for the specified time period. | | | | | | |
| **SHIFTER MOVES TO AGITATION POSITION** | 8 | | | | On | ~5-15 |
| If motor does not agitate, go to Manual Test: Gentle or Heavy Agitation, page 2-11. | | | | | | |
| **MOTOR AGITATES** | 8 | | | 1 | On | 10 |
| If motor does not agitate, go to Manual Test: Gentle or Heavy Agitation, page 2-11. | | | | | | |
| **DRAIN PUMP WILL ACTUATE** | 8 | | 2 | | On | ~30-40 |
| If water is not draining, go to Manual Test: Drain, page 2-11. | | | | | | |
| **SHIFTER MOVES TO SPIN POSITION** | 8 | | 2 | 1 | On | ~5-15 |
| If basket is not turning, go to Manual Test: Low or High Spin, page 2-11. | | | | | | |
| **MOTOR SPINS** | 8 | 4 | | | On | 10 |
| If basket is not turning, go to Manual Test: Low or High Spin, page 2-11. | | | | | | |
| **LID REMAINS LOCKED UNTIL WASHER SENSES A STOPPED BASKET** | 8 | 4 | | 1 | On | ~30-45 |
| Basket must stop spinning (0 RPM) before test continues to next phase. Time for basket to stop spinning may vary from 30 seconds up to 2 minutes. | | | | | | |
| **LID WILL UNLOCK AND CYCLE COMPLETES** | 8 | 4 | 2 | | On | 1 |
| If lid does not unlock, go to Manual Test: Lid Lock, page 2-11. | | | | | | ~3 min |

# For Service Technician Use Only

## Manual Test Mode (Washer) - See page 2-4 to access Manual Test Mode

= ON

Pressing the **START** button will activate/deactivate each output. When the output is activated, the corresponding Status LEDs will flash. **IMPORTANT**: Lid must be closed and locked to perform **SPIN** & **AGITATE** tests.

| OUTPUT | STATUS LEDs | | | | |
|---|---|---|---|---|---|
| Output Details<br>**NOTE**: Outputs will time-out after 5 minutes. | WASH | RINSE | DRAIN SPIN | DONE | LID LOCK |
| **LID LOCK** | | | | | |
| Lock and unlock the lid. **NOTES**: When lock is enabled, the "Lid Lock" LED will turn ON. Will only lock when lid is closed. Will only unlock when basket RPM is 0. If lid is not closed, washer will flash status LEDs on and off.<br>• If lid does not lock or unlock, go to TEST #7: Lid Lock, page 3-15. | | | | | |
| **COLD VALVE** | | | | 1 | |
| Turns ON and turns OFF cold water valve.<br>• If valve does not turn on, go to TEST #2: Valves, page 3-7. | | | | | |
| **HOT VALVE** | | | 2 | | |
| Turns ON and turns OFF hot water valve.<br>• If valve does not turn on, go to TEST #2: Valves, page 3-7. | | | | | |
| **RESERVED FOR FUTURE DEVELOPMENT** | | | 2 | 1 | |
| If selected, status LEDs will flash on and off. | | | | | |
| **RESERVED FOR FUTURE DEVELOPMENT** | | 4 | | | |
| If selected, status LEDs will flash on and off. | | | | | |
| **RESERVED FOR FUTURE DEVELOPMENT** | | 4 | | 1 | |
| If selected, status LEDs will flash on and off. | | | | | |
| **RESERVED FOR FUTURE DEVELOPMENT** | | 4 | 2 | | |
| If selected, status LEDs will flash on and off. | | | | | |
| **DRAIN** | | 4 | 2 | 1 | |
| Turns ON and turns OFF the drain pump.<br>• If pump does not turn on, go to TEST #6: Drain Pump, page 3-14. | | | | | |
| **RESERVED FOR FUTURE DEVELOPMENT** | 8 | | | | |
| If selected, status LEDs will flash on and off. | | | | | |
| **LOW SPIN – To perform test, lid must be closed and locked.** | 8 | | | 1 | On |
| Spins basket from 0 to 500 RPM. **NOTE**: Allow up to 15 seconds for shifter to reposition. **IMPORTANT**: To activate Low Spin, must read "0" and lid must be closed with lid lock enabled. If lid is not closed, status LEDs will flash on and off. **IMPORTANT**: Water in tub must be drained before test.<br>• If motor does not spin, go to TEST #3a & 3b: Drive System (Shifter & Motor), pages 3-8 & 3-10. | | | | | |
| **HIGH SPIN – To perform test, lid must be closed and locked.** | 8 | | 2 | | On |
| Spins basket from 0 to maximum RPM. **NOTE**: Allow up to 15 seconds for shifter to reposition. **IMPORTANT**: To activate High Spin, RPM must read "0" and lid must be closed with lid lock enabled. If lid is not closed, status LEDs will flash on and off. IMPORTANT: Water in tub must be drained before test.<br>• If motor does not spin, go to TEST #3a & 3b: Drive System (Shifter & Motor), pages 3-8 & 3-10. | | | | | |
| **GENTLE AGITATION – To perform test, lid must be closed and locked.** | 8 | | 2 | 1 | On |
| Shifts from idle motor to gentle CW/CCW agitation. **NOTE**: Allow up to 15 seconds for shifter to reposition. **IMPORTANT**: To activate Gentle Agitation, RPM must read "0" and lid must be closed with lid lock enabled. If lid is not closed, status LEDs will flash on and off.<br>• If motor does not agitate, go to TEST #3a & 3b: Drive System (Shifter & Motor), pages 3-8 & 3-10. | | | | | |
| **HEAVY AGITATION – To perform test, lid must be closed and locked.** | 8 | 4 | | | On |
| Shifts from idle motor to gentle CW/CCW agitation. **NOTE**: Allow up to 15 seconds for shifter to reposition. **IMPORTANT**: To activate Gentle Agitation, RPM must read "0" and lid must be closed with lid lock enabled. If lid is not closed, status LEDs will flash on and off.<br>• If motor does not agitate, go to TEST #3a & 3b: Drive System (Shifter & Motor), pages 3-8 & 3-10. | | | | | |

# For Service Technician Use Only

**⚠ WARNING**

**Electrical Shock Hazard**

**Disconnect power before servicing.**

**Replace all parts and panels before operating.**

**Failure to do so can result in death or electrical shock.**

## Washer Troubleshooting Guide

**NOTE: Always check for error codes first (pages 2-6 to 2-7)**

Some tests will require accessing components. See page 3-3, for component locations.

For detailed troubleshooting procedures, refer to "Troubleshooting Tests" beginning on page 3-5.

| Problem | Possible Cause | Checks & Tests |
|---|---|---|
| **Won't Power Up**<br>• No operation<br>• No Status LEDs | No power to washer. | Check power at outlet, check circuit breakers, fuses, or junction box connections. |
| | Connection problem between AC plug and power harness. | Check the AC plug, power harness, and main control for continuity. |
| | Main control not properly installed in console. | See TEST #4: Console and Indicators, page 3-12. |
| | Main Control problem. | See Test #1: Main Control, page 3-5. |
| **Won't Start Cycle**<br>No response when START button is pressed | Lid not closed. | Check for interference with lid. Lid must be closed for cycle to start. |
| | User Interface problem. | See TEST #4: Console and Indicators, page 3-12. |
| | Main Control problem. | See TEST #1: Main Control, page 3-5. |
| **UI Won't Accept Selections** | User Interface problem. | See TEST #4: Keys and Encoders, page 3-12. |
| | Main Control problem. | See TEST #1: Main Control, page 3-5. |
| **Won't Fill** | No water supplied to washer. | 1. Check water connections to washer.<br>2. Verify that hot and cold waster supply is on. |
| | Plugged filter/screen. | Check for plugged filter or screen in the water valve or hoses. |
| | Drain hose installation. | Check for proper drain hose installation. |
| | Valve problem. | See TEST #2: Valves, page 3-7. |
| | Main Control problem. | See Test #1: Main Control, page 3-5. |
| **Overfills** | Pressure hose. | See TEST #5: Water Level, page 3-13. |
| | Valve problem. | See TEST #2: Valves, page 3-7. |
| | Washer requires calibration. | Perform washer calibration on page 2-4. |
| | Onboard pressure transducer. | See TEST #5: Water Level, page 3-13. |
| | Main control problem. | See TEST #1: Main Control, page 3-5. |
| **Incorrect Water Temperature** | Water hose installation. | Make sure inlet hoses are connected properly. |
| | Valve problem. | See TEST #2: Valves, page 3-7. |
| | Main control problem. | See TEST #1: Main Control, page 3-5. |

*Continued on next page . . .*

# For Service Technician Use Only

## Washer Troubleshooting Guide (continued)

| Problem | Possible Cause | Checks & Tests |
|---|---|---|
| **Won't Agitate** | Water covering the impeller? | See TEST #5: Water Level, page 3-13. |
| | Is lid open during the cycle? | Check for interference with lid. Lid must be closed. |
| | Drive belt. | Verify that drive belt is not damaged. |
| | Harness connections. | Check harness connections between main control and drive system. |
| | Shifter problem. | See TEST #3a: Drive System – Shifter, page 3-8. |
| | Motor problem. | See TEST #3b: Drive System – Motor, page 3-10. |
| | Tachometer problem. | No tub movement or tub speed out of normal range (obstruction/belt/motor). |
| | Main Control problem. | See TEST #1: Main Control, page 3-5. |
| **Won't Spin** | Is lid lock showing open during the cycle? | See TEST #7: Lid Lock, page 3-15. |
| | Drive belt. | Verify that drive belt is not damaged. |
| | Harness connections. | Check harness connections between main control and drive system. |
| | Shifter problem. | See TEST #3a: Drive System – Shifter, page 3-8. |
| | Motor problem. | See TEST #3b: Drive System – Motor, page 3-10. |
| | Tachometer problem. | No tub movement or tub speed out of normal range (obstruction/belt/motor). |
| | Main Control problem. | See TEST #1: Main Control, page 3-5. |
| **Won't Drain** | Drain hose installation. | Check for proper drain hose installation. Make sure it is not inserted more than 4.5" (114 mm). Make sure drain hose is not sealed into drain pipe, and that there is an air gap for ventilation. |
| | Standpipe position. | Ensure drain height is between 39" (991 mm) and 8' (2.4 m) above the floor. |
| | Plugged drain hose. | Check drain hose for obstructions. |
| | Obstructions to drain pump. | Check tub sump under agitator plate & basket for obstructions. |
| | Harness connections. | Check harness connections between main control and drain pump. |
| | Drain pump. | See TEST #6: Drain Pump, page 3-14. |
| | Main Control problem. | See TEST #1: Main Control, page 3-5. |
| **Cycle Time Longer Than Expected** | Oversuds. | 1. Verify use of HE detergent.<br>2. Excessive detergent usage. |
| | Off balance. | 1. Load is off balance.<br>2. Balance ring water leak. |
| | Drain hose installation. | Check for proper drain hose installation. Make sure it is not inserted more than 4.5" (114 mm). Make sure drain hose is not sealed into drain pipe, and that there is an air gap for ventilation. |
| | Standpipe position. | Ensure drain height is between 39" (991 mm) and 8' (2.4 m) above the floor. |
| | Draining slowly. | Check for pump or drain hose obstructions. |
| | Water pressure drop. | Results in longer fill time. |
| | Friction or drag on drive. | Check motor and bearings; check for clothes between tub and basket. |
| | Weak suspension. | Basket should not bounce up and down more than once when pushed. |

*Continued on next page . . .*

# For Service Technician Use Only

## Washer Troubleshooting Guide (continued)

| Problem | Possible Cause | Checks & Tests |
|---|---|---|
| **Poor Wash Performance**<br>Please reference Use & Care Guide | Oversuds. | 1. Verify use of HE detergent.<br>2. Excessive detergent usage. |
| | Load is tangling. | 1. Washer not loaded properly.<br>2. Perform washer calibration on page 2-4. |
| | Incorrect water level. | 1. Perform washer calibration on page 2-4.<br>2. See TEST #2: Valves, page 3-7.<br>3. See TEST #5: Water Level, page 3-13. |
| | Clothes wet after cycle is complete (not water saturated, but very damp) | 1. Overloaded washer.<br>2. Oversuds (see above).<br>3. Items caught in tub sump.<br>4. Weak suspension.<br>5. Shifter not moving into position (see TEST #3a).<br>6. Cold/Rinse water > 105°F (40°C).<br>7. See TEST #6: Drain Pump, page 3-14. |
| | Load not rinsed. | 1. Check proper water supply.<br>2. Not using HE detergent.<br>3. Washer not loaded properly.<br>4. Shifter not moving into position (see TEST #3a).<br>5. See TEST #2: Valves, page 3-7. |
| | Not cleaning clothes | 1. Washer not loaded properly.<br>2. Not using HE detergent.<br>3. Not using correct cycle.<br>4. Shifter not moving into position (see TEST #3a). |
| | Fabric damage. | 1. Washer overloaded.<br>2. Bleach added incorrectly.<br>3. Sharp items in tub. |
| | Wrong option or cycle selection. | Refer customer to “Use & Care Guide”. |

# For Service Technician Use Only

## Dryer Troubleshooting Guide

| Problem | Possible Cause | Checks & Tests |
|---|---|---|
| **Won't Power Up**<br>• No operation<br>• No button response | No power to dryer. | Check power at outlet, check circuit breakers, fuses, or junction box connections. |
| | Connection problem between AC plug and power harness. | See Test #1: Supply Connections, page 4-8. |
| **Won't Start Cycle**<br>• No response when Start button is pressed | Door not fully closed or striking the door latch. | Be sure the door is completely closed, then press and hold the START button. |
| | Door switch problem. | See Test #5: Door Switch, page 4-14. |
| | Drive belt/belt switch problem. | See Test #2: Motor Circuit, page 4-9. |
| | Thermal fuse/motor problem. | See Test #2: Motor Circuit, page 4-9. |
| **Won't Shut Off When Expected** | Poor airflow. | Check lint screen and exhaust vent. Clean if necessary. |
| | Moisture sensor problem. | See Test #4: Moisture Sensor, page 4-13 (long vent models only). |
| | Heat system problem. | See Test #3: Heat System, page 4-10. |
| **Drum Won't Spin** | Drive belt/belt switch problem. | See Test #2: Motor Circuit, page 4-9. |
| | Thermal fuse problem. | See Test #3a: Thermal Fuse, page 4-11. |
| | Door switch problem. | See Test #5: Door Switch, page 4-14. |
| | Motor problem. | See Test #2: Motor Circuit, page 4-9. |
| **Won't Heat** | Check Installation. | Verify proper dryer installation. |
| | Heat system malfunction. | See Test #3: Heat System, page 4-10. |
| | Inline thermal fuse problem. | See Test #3d: Inline Thermal Fuse, page 4-11. |
| **Heats In Air Cycle** | Heater coil shorted. | See Test #3: Heat System, page 4-10. |
| | Heater relay shorted. | See Test #3: Heat System, page 4-10. |
| | Heater system problem. | See Test #3: Heat System, page 4-10. |
| **Shuts Off Before Clothes Are Dry** | Lint screen full. | Clean if necessary. Refer customer to Use and Care Guide. |
| | Exhaust vent clogged. | Clean if necessary. Refer customer to Use and Care Guide. |
| | Moisture sensor problem. | See Test #4: Moisture Sensor, page 4-13 (long vent models only). |

# Notes

# Section 3: Testing – Washer

This section provides a wiring diagram, control board specifications, testing procedures and strip circuits for the 27" Stacked Laundry Center "Washer."

- Testing: Safety Information
- Component Locations - Console Electronics
- Component Locations - Drive System/Drain Pump
- Wiring Diagram
- Component Testing
- TEST #1: Main Control
- Main Control Board / Connectors & Pinouts
- TEST #2: Valves
- TEST #3a: Drive System - Shifter
- TEST #3b: Drive System - Motor
- TEST #4: Console and Indicators
- TEST #5: Water Level
- TEST #6: Drain Pump
- TEST #7: Lid Lock
- Notes

# For Service Technician Use Only

**⚠ DANGER**

**Electrical Shock Hazard**

**Only authorized technicians should perform diagnostic voltage measurements.**

**After performing voltage measurements, disconnect power before servicing.**

**Failure to follow these instructions can result in death or electrical shock.**

**⚠ WARNING**

**Electrical Shock Hazard**

**Disconnect power before servicing.**

**Replace all parts and panels before operating.**

**Failure to do so can result in death or electrical shock.**

## Voltage Measurement Safety Information

**When performing live voltage measurements, you must do the following:**

- Verify the controls are in the off position so that the appliance does not start when energized.
- Allow enough space to perform the voltage measurements without obstructions.
- Keep other people a safe distance away from the appliance to prevent potential injury.
- Always use the proper testing equipment.
- After voltage measurements, always disconnect power before servicing.

**IMPORTANT: Electrostatic Discharge (ESD) Sensitive Electronics**
**ESD problems are present everywhere. Most people begin to feel an ESD discharge at approximately 3000V. It takes as little as 10V to destroy, damage, or weaken the main control assembly. The new main control assembly may appear to work well after repair is finished, but a malfunction may occur at a later date due to ESD stress.**

- **Use an anti-static wrist strap. Connect wrist strap to green ground connection point or unpainted metal in the appliance**

**-OR-**

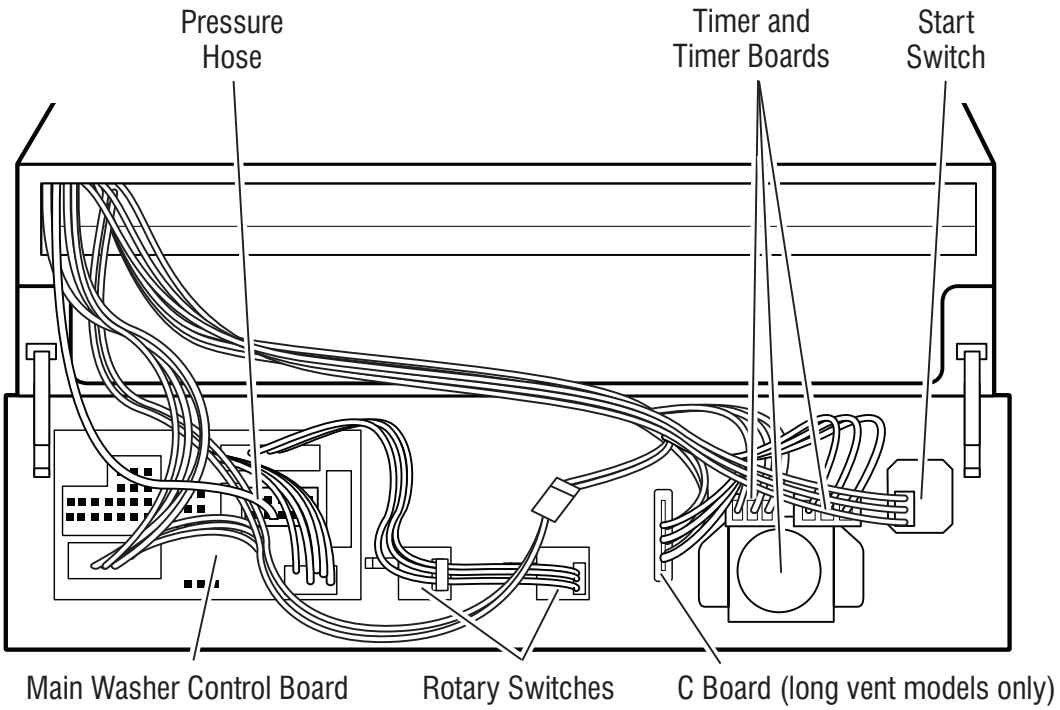
- **Touch your finger repeatedly to a green ground connection point or unpainted metal in the appliance.**
- **Before removing the part from its package, touch the anti-static bag to a green ground connection point or unpainted metal in the appliance.**
- **Avoid touching electronic parts or terminal contacts; handle electronic control assembly by edges only.**
- **When repackaging main control assembly in anti-static bag, observe above instructions.**

**IMPORTANT SAFETY NOTICE — "For Technicians only"**

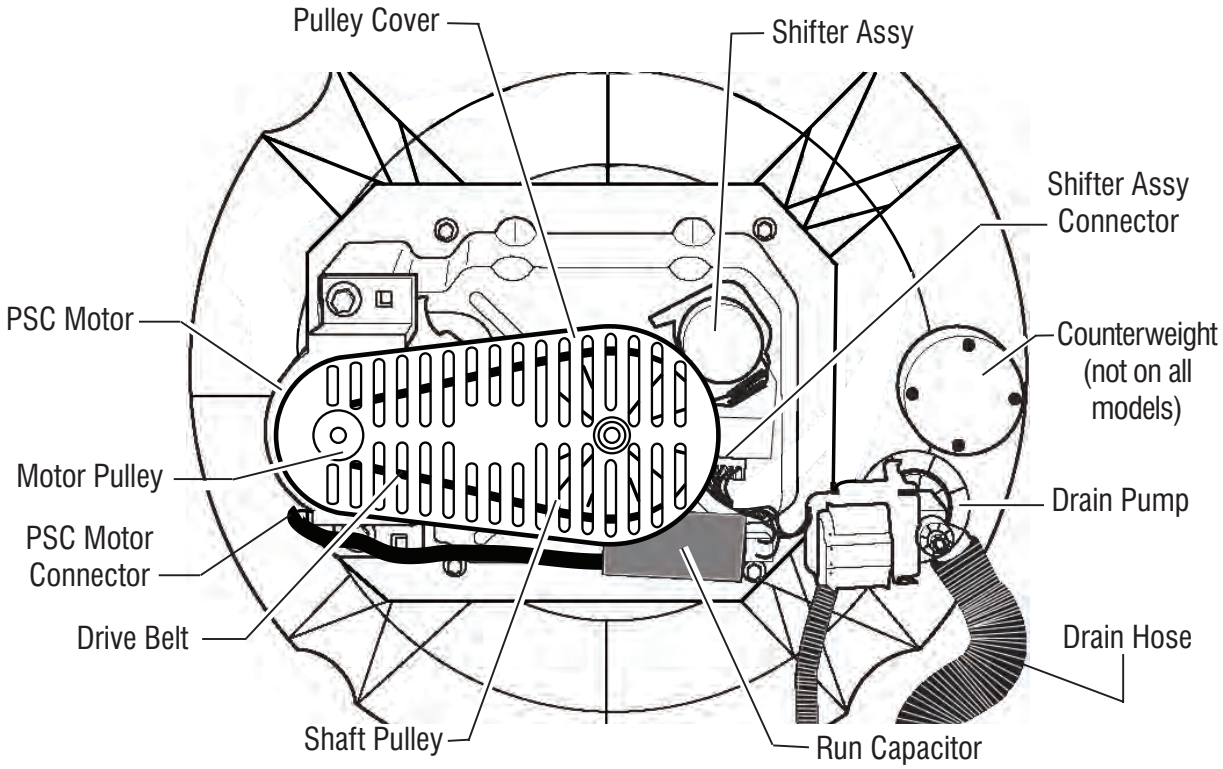
**This service data sheet is intended for use by persons having electrical, electronic, and mechanical experience and knowledge at a level generally considered acceptable in the appliance repair trade. Any attempt to repair a major appliance may result in personal injury and property damage. The manufacturer or seller cannot be responsible, nor assume any liability for injury or damage of any kind arising from the use of this data sheet.**

# For Service Technician Use Only

## COMPONENT LOCATIONS — CONSOLE ELECTRONICS & SWITCHES

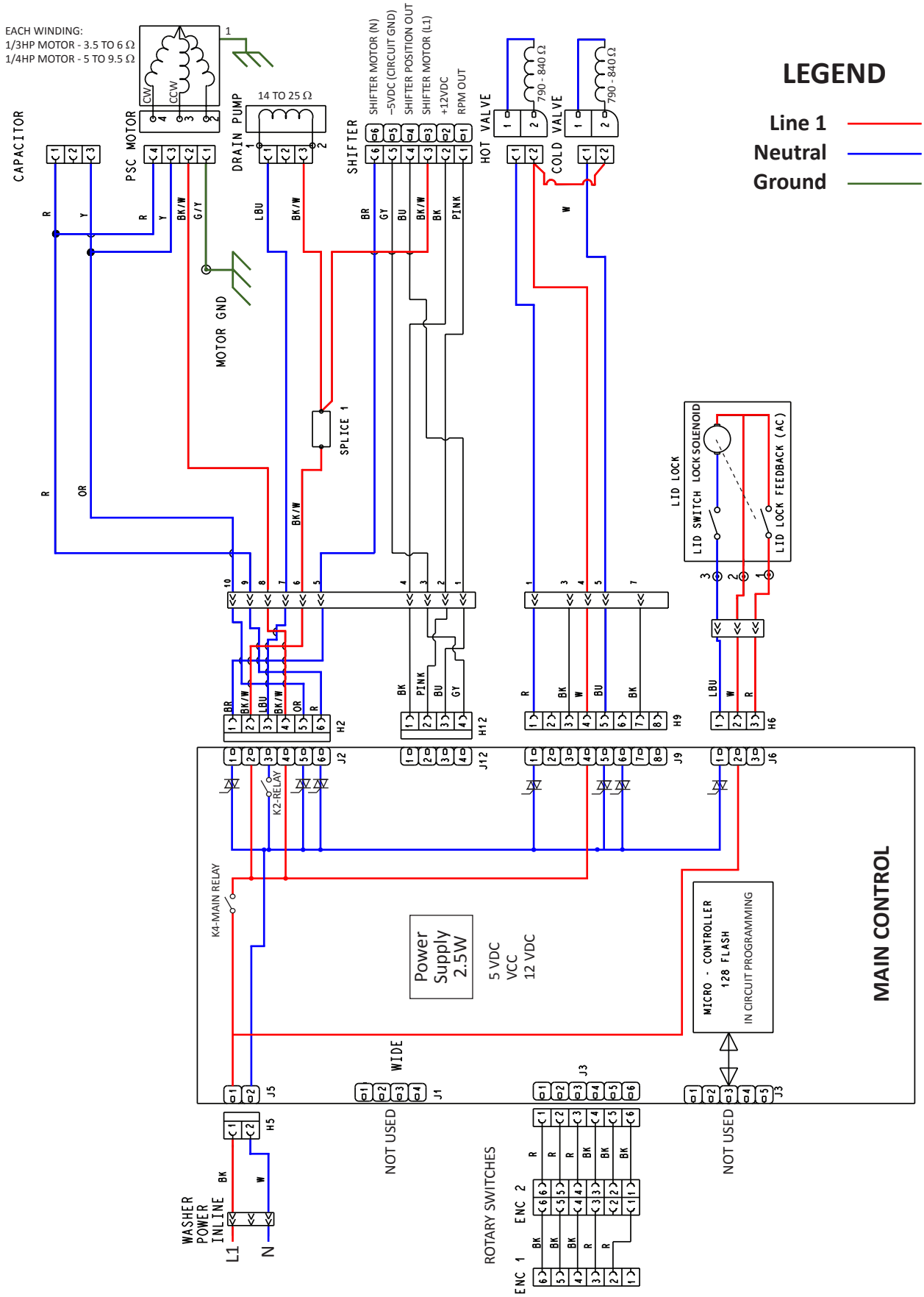



## COMPONENTS LOCATIONS, BOTTOM VIEW — DRIVE SYSTEM & DRAIN PUMP



# For Service Technician Use Only

WIRING DIAGRAM



# For Service Technician Use Only

**⚠ DANGER**

**Electrical Shock Hazard**

**Only authorized technicians should perform diagnostic voltage measurements.**

**After performing voltage measurements, disconnect power before servicing.**

**Failure to follow these instructions can result in death or electrical shock.**

## Component Testing

### TESTING WASHER COMPONENTS FROM THE CONTROL

Before testing any of the components, perform the following checks:

- The most common cause for mis-diagnosed control failure is poor connections. Therefore, disconnecting, inspecting and reconnecting wires will be necessary throughout test procedures.
- All tests/checks should be made with a VOM or DVM having a sensitivity of 20,000 ohms-per-volt DC, or greater.
- Check all connections before replacing components, looking for broken or loose wires, failed terminals, or wires not pressed into connectors far enough.
- Voltage checks must be made with all connectors attached to the boards.
- Resistance checks must be made with power cord unplugged or power disconnected, and with wiring harness or connectors disconnected from the control.

The testing procedures in this section may require the use of needle probes to measure voltage. Failure to use needle probes will damage the connectors.

## TEST #1: Main Control

This test checks for incoming and outgoing power to and from main control. This test assumes that proper voltage is present at the outlet.

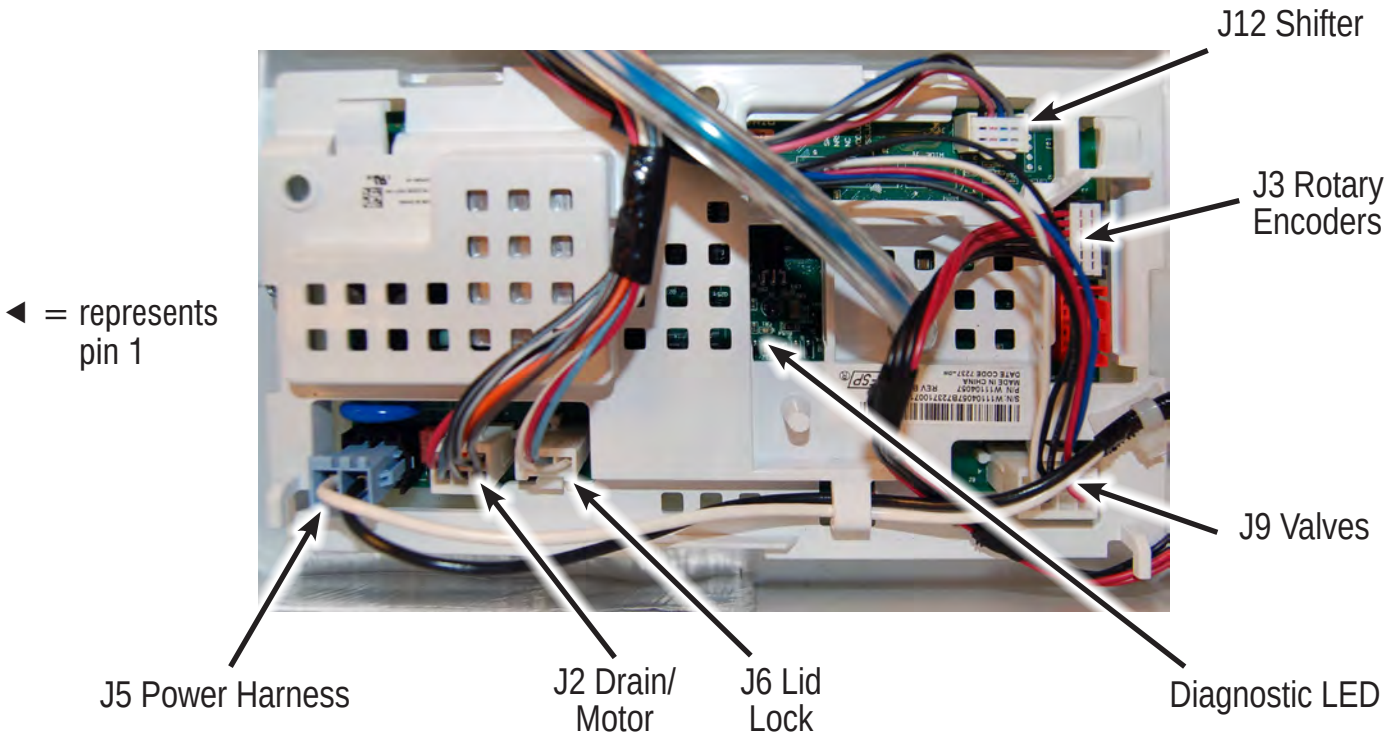
1. Unplug washer/dryer or disconnect power.
2. Remove console to access main control.
3. Verify that ALL connectors are inserted all the way into the main control.
4. Plug in washer/dryer or reconnect power.
5. With a voltmeter set to **AC**, connect black probe to J5-2 (Neutral) and red probe to J5-1 (L1).
   - ➢ If 120 VAC is present, go to step 6.
   - ➢ If 120 VAC is not present, check the AC power cord and power harness for continuity. See Wiring Diagram on page 3-4.
6. Is the "Diagnostic LED" ON or OFF? (See Figure 1 on page 3.6 for LED location.)
   - ➢ ON: (+5 VDC present) continue to step 7.
   - ➢ OFF: (+5 VDC missing) proceed to step 8.
7. With a voltmeter set to **DC**, connect black probe to J12-4 (Circuit Gnd) and red probe to J12-1 (+12 VDC).
   - ➢ If +12 VDC is present, main control supplies are good.
   - ➢ If +12 VDC is not present, go to step 8.
8. Check if shifter assembly is affecting the main control DC supplies.
   a. Unplug washer/dryer or disconnect power.
   b. Remove connector **J12** from main control.
   c. Plug in washer/dryer or reconnect power.
   d. Repeat steps 6 and 7. Perform the +12 VDC check inside header J12 on the board – **do not short pins together.**
   - ➢ If one or more DC voltages are still missing, go to step 9.
   - ➢ If the DC voltages return, check for short in harness between main control and shifter assy.
   - ➢ If harness and connections are good, replace shifter assembly.
9. Main Control has malfunctioned.
   a. Unplug washer/dryer or disconnect power.
   b. Replace the main control.
   c. Reassemble all parts and panels.
   d. Plug in washer/dryer or reconnect power.

Calibrate washer and perform Automatic Test to verify repair.

**Continue to next page for Main Control Board diagram and Main Control Board connectors & pinouts**

# For Service Technician Use Only

## MAIN CONTROL BOARD (FIGURE 1)




## MAIN CONTROL BOARD CONNECTORS AND PINOUTS (FIGURE 2)

**J12** — SHIFTER

| | | |
|---|---|---|
| J12-4 | GRY | –5VDC (CIRCUIT GND) |
| J12-3 | BLU | SHIFTER POSITION INPUT |
| J12-2 | PNK | RPM INPUT |
| J12-1 | BLK | +12VDC |

**J9** — VALVES

| | | |
|---|---|---|
| J9-8 | | OPEN |
| J9-7 | | OPEN |
| J9-6 | | OPEN |
| J9-5 | BLU | COLD VALVE (N) |
| J9-4 | BK/W | COMMON (L1) |
| J9-3 | | OPEN |
| J9-2 | | OPEN |
| J9-1 | RED | HOT VALVE (N) |

**J5** — POWER HARNESS

| | | |
|---|---|---|
| J5-2 | BLK | NEUTRAL |
| J5-1 | BLK | L1 |

**J3** — ROTARY ENCODERS

| | | |
|---|---|---|
| J3-6 | BLK | ROW 2 |
| J3-5 | BLK | ROW 3 |
| J3-4 | BLK | COLUMN 0 |
| J3-3 | RED | COLUMN 1 |
| J3-2 | RED | COLUMN 2 |
| J3-1 | RED | COLUMN 3 |

**J6** — LID LOCK

| | | |
|---|---|---|
| J6-3 | RED | LOCK SWITCH |
| J6-2 | WHT | L1 |
| J6-1 | BLU | LID SWITCH/LOCK SOLENOID |

**J2** — MOTOR / DRAIN

| | | |
|---|---|---|
| J2-6 | RED | MOTOR CW WINDING (N) |
| J2-5 | ORN | MOTOR CCW WINDING (N) |
| J2-4 | BK/W | MOTOR (L1 COMMON) |
| J2-3 | LT BLU | DRAIN PUMP MOTOR (N) |
| J2-2 | BK/W | L1 COMMON |
| J2-1 | BRN | SHIFTER MOTOR (N) |

# For Service Technician Use Only

**⚠ WARNING**

**Electrical Shock Hazard**

**Disconnect power before servicing.**

**Replace all parts and panels before operating.**

**Failure to do so can result in death or electrical shock.**

## TEST #2 Valves

This test checks the electrical connections to the valves, and the valves themselves.

1. Check the relays and electrical connections to the valves by performing the Cold and Hot Valve tests under Manual Test Mode on page 2-11. Each test activates and deactivates the selected valve. The following steps assume one (or more) valve(s) did not turn on.
2. For the valve(s) in question check the individual solenoid valves:
   a. Unplug washer/dryer or disconnect power.
   b. Remove console to access main control.
   c. Remove connector J9 from main control. Refer to main control diagram on page 3-6.
   d. Check harness connection to solenoid valves.
3. Check resistance of the valve coils across the following J9 connector pinouts:

| Valve | Pinout |
|---|---|
| Hot Valve | J9, 1 & 4 |
| Cold Valve | J9, 5 & 4 |

Resistance should be 890–1.3k Ω.

- If resistance readings are tens of ohms outside of range, check lower washer harness connector according to diagram. If still outside of range, replace the valve assembly.
- If resistance readings are within range, replace main control and calibrate washer. Perform Automatic Test to verify repair.

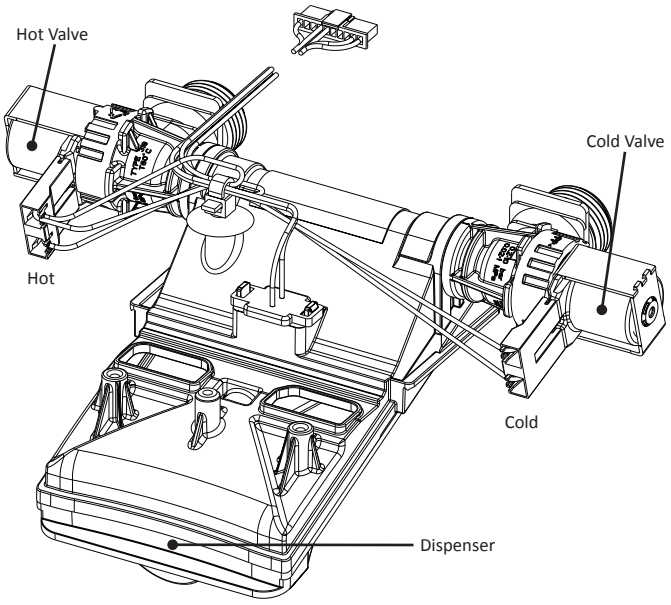



***Figure 1***

### VALVES

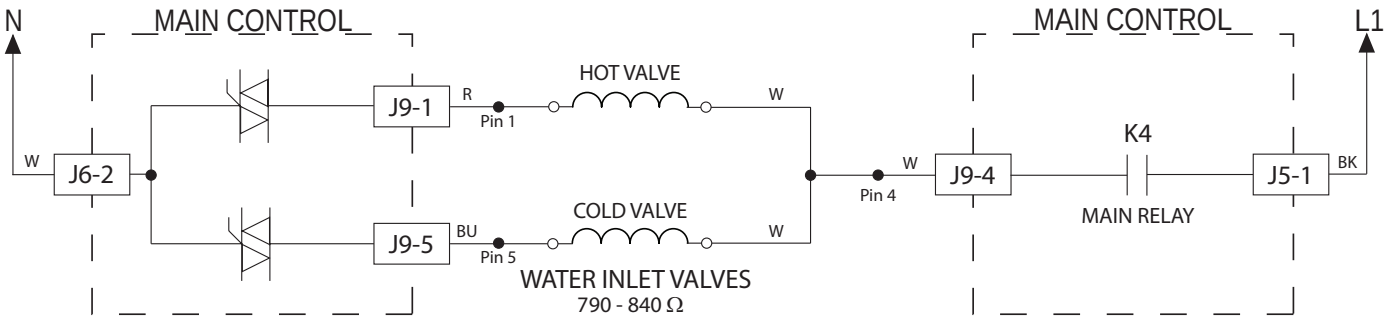



***Figure 2***

# For Service Technician Use Only

**⚠ DANGER**

**Electrical Shock Hazard**

**Only authorized technicians should perform diagnostic voltage measurements.**

**After performing voltage measurements, disconnect power before servicing.**

**Failure to follow these instructions can result in death or electrical shock.**

## TEST #3 Drive System

### Pre-Test Procedure

1. Activate Service Diagnostic Test Mode, retrieve any fault/error codes, and clear them. If the displayed error codes are F7-E1, F7-E5, or motor speed codes, there is likely a motor, capacitor, or shifter related issue.
2. Once the error codes are cleared, enter Manual Test Mode and run the Heavy Agitation test; if the motor runs after 15–20 seconds, there is not a problem with the motor, capacitor, control, or wiring harness connections (although the black wire from the shifter to the control should still be checked).

   **NOTE**: The speed wheel in the transmission only turns during the spin cycle.
3. While in Manual Test Mode, try to get the washer to spin; if the motor hums briefly and then shuts down (with the lid lock indicator blinking), go to Fault Code Display Mode and look for shifter or basket speed errors, which verify an issue with the shifter/sensor assembly (optical sensor is not reading the motor speed).

## TEST #3a: Drive System – Shifter

This test checks connections, shifter motor, switch, and optical sensor.

**NOTE**: Refer to Figure 2, “Shifter Assembly Strip Circuit” on page 3-9 for tests and measurements.

**IMPORTANT**: Drain water from tub before accessing bottom of washer.

### Functional Check:

1. Check the shifter and electrical connections by performing both the Spin AND Agitate test under Manual Test Mode on page 2-11. The following steps assume that this step was unsuccessful.
2. Unplug washer/dryer or disconnect power.
3. Check to see if basket will turn freely.
   - ➢ If basket turns freely, go to step 4.
   - ➢ If basket does not turn freely, determine what is causing the mechanical friction or lockup.
4. Remove console to access main control.
5. Visually check that the J12 and J2 connectors are inserted all the way into the main control.
   - ➢ If visual checks pass, go to step 6.
   - ➢ If connectors are not inserted properly, reconnect J12 and J2 and repeat step 1.

### Shifter Motor:

**NOTE**: Before starting the electrical check, verify that the cam on the splutch is moving freely and not binding.

6. Remove connector J2 from main control. With an ohmmeter, verify resistance of the shifter motor across the following J2 connector pinouts:

| Component | J2 Connector Pinout |
|---|---|
| Shifter Motor | J2, 1 & 2 |

Resistance should be 2k to 3.5k Ω.

- ➢ If values are correct, reconnect J2 and proceed to step 7.
- ➢ If values are open or out of range, check lower washer harness connector according to diagram. If the values are still open or out of range, go to step 13.

7. Plug in washer/dryer or reconnect power.
8. With a voltmeter set to AC, connect the black probe to J2-2 (L1) and red probe to J2-1 (N). Activate shifter motor by switching between Spin and Agitate modes. Energize outputs using Manual Test Mode on page 2-11.

   **IMPORTANT**: Lid must be closed with Lid Lock enabled to run the SPIN and AGITATE tests.

   **NOTE**: It will take 4–15 seconds for the shifter to change states.
   - ➢ If 120 VAC is present, go to step 9.
   - ➢ If 120 VAC is not present, go to step 17.

### Shifter Switch:

9. With a voltmeter set to **DC**, connect the black probe to J12-4 (Circuit Gnd) and red probe to J12-3 (Shifter Switch). In manual test mode, switch between Spin and Agitate modes. Voltage should toggle between 0 and +5 VDC.

   SPIN = +5 VDC

   AGITATE = 0 VDC
   - ➢ If voltage corresponds to setting, go to step 10.
   - ➢ If voltage does not switch, check lower harness connector according to diagram. If voltage still does not switch, go to step 12.

### Optical Sensor:

10. With a voltmeter set to DC, connect the black probe to J12-4 (Circuit Gnd) and red probe to J12-1 (+12 VDC).
    - ➢ If +12 VDC is present, go to step 11.
    - ➢ If +12 VDC is not present, check lower harness connector according to diagram. If +12 VDC is still not present, go to step 17.

# For Service Technician Use Only

11. Activate Tachometer Verification Mode from the Service Diagnostic Test Modes (see page 2-5). Slowly turn the basket by hand. The four status LEDs should illuminate one at a time to represent basket RPM.
    - ➢ If the tachometer is not verified, go to step 12.
    - ➢ If the tachometer is verified, go to step 17.
12. Unplug washer/dryer or disconnect power.
13. Tilt washer/dryer back to access the bottom of the washer and the drive motor area.
14. Visually check the electrical connections to the shifter.
    - ➢ If visual check passes, go to step 15.
    - ➢ If connections are loose, reconnect the electrical connections and repeat step 1.
15. With an ohmmeter, check the harness for continuity between the shifter and main control using the pinouts in the following chart.
    - ➢ If there is continuity, go to step 16.
    - ➢ If there is no continuity, replace the lower or upper washer harness and repeat step 1.

| Shifter to Main Control & Drain Pump |
|---|
| Shifter connector Pin 1 to lower harness connector Pin 2 to main control J12-2 |
| Shifter connector Pin 2 to lower harness connector Pin 4 to main control J12-1 |
| Shifter connector Pin 3 to lower harness connector Pin 6 to main control J2-2 |
| Shifter connector Pin 4 to lower harness connector Pin 1 to main control J12-3 |
| Shifter connector Pin 5 to lower harness connector Pin 3 to main control J12-4 |
| Shifter connector Pin 6 to lower harness connector Pin 5 to main control J2-1 |

16. Replace the shifter assembly.
    a. Unplug washer/dryer or disconnect power.
    b. Replace shifter assembly.
    c. Reassemble all parts and panels.
    d. Plug in washer/dryer or reconnect power. Calibrate washer and perform Automatic Test to verify repair.
17. If the preceding steps did not correct the problem, replace the main control.
    a. Unplug washer/dryer or disconnect power.
    b. Replace the main control.
    c. Reassemble all parts and panels.
    d. Plug in washer/dryer or reconnect power. Calibrate washer and perform Automatic Test to verify repair.

## The Shifter (Actuator)

The shifter, also know as the actuator, serves several functions.

1. It has a synchronous motor that shifts the splutch slider.
2. It monitors the position of the splutch.
3. It houses a transmission speed/position optical sensor.

*Figure 1 - Shifter (Actuator)*

### SHIFTER ASSEMBLY

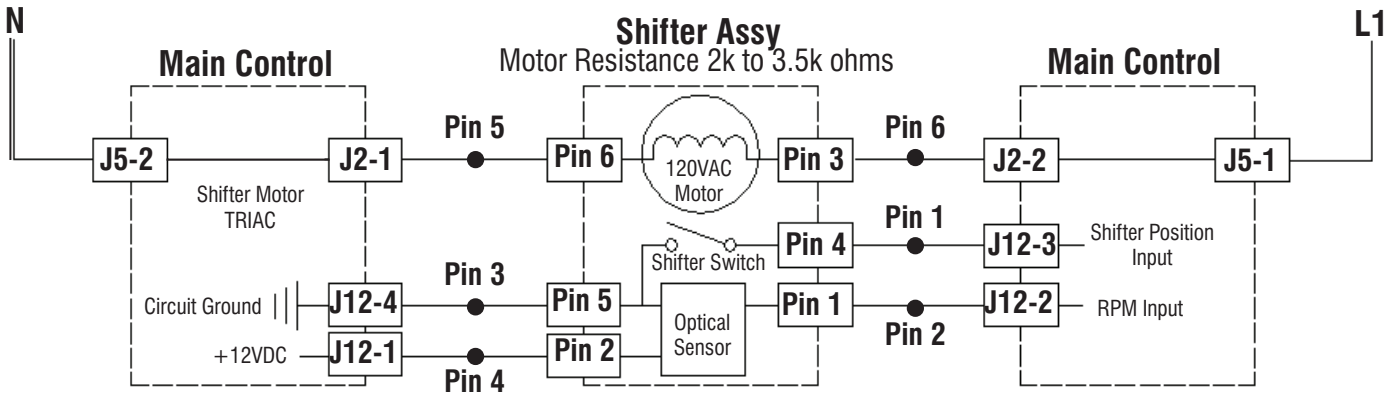



*Figure 2*

# For Service Technician Use Only

**⚠ DANGER**

**Electrical Shock Hazard**

**Only authorized technicians should perform diagnostic voltage measurements.**

**After performing voltage measurements, disconnect power before servicing.**

**Failure to follow these instructions can result in death or electrical shock.**

## TEST #3b: Drive System - Motor

This test checks the motor, motor windings, wiring, and start capacitor.

**NOTE**: Refer to Figure 3, "PSC Motor Strip Circuit" on page 3-11 for tests and measurements.

**IMPORTANT**: Drain water from tub before accessing bottom of washer.

1. Check the motor and electrical connections by the Gentle or Heavy Agitation test under Manual Test Mode on page 9. Verify that the basket is spinning in a clockwise direction while performing Low or High Spin test under Manual Test Mode on page 2-11. The following steps assume that this step was unsuccessful.
2. Unplug washer/dryer or disconnect power.
3. Check to see if basket will turn freely.
   - ➢ If basket turns freely, go to step 4.
   - ➢ If basket does not turn freely, determine what is causing the mechanical friction or lockup.
4. Remove console to access main control.
5. Visually check that the J12 and J2 connectors are inserted all the way into the main control.
   - ➢ If visual checks pass, go to step 6.
   - ➢ If connectors are not inserted properly, reconnect J12 and J2 and repeat step 1.
6. Plug in washer/dryer or reconnect power. Run the Gentle Agitation test under Manual Test Mode on page 2-11.
7. With a voltmeter set to **AC**, connect black probe to J2-4 (L1) and red probe to J2-6 (CW Winding).
   - ➢ If 120 VAC is cycling ON during CW rotation, go to step 8.
   - ➢ If 120 VAC is not present, go to Test #1: Main Control, page 3-5.
8. With a voltmeter set to **AC**, connect black probe to J2-4 (L1), red probe to J2-5 (CCW Winding).
   - ➢ If 120 VAC is cycling ON during CCW rotation, go to step 9.
   - ➢ If 120 VAC is not present, go to Test #1: Main Control, page 3-5.
9. Unplug washer/dryer or disconnect power.
10. Remove connector **J2** from main control. With an ohmmeter, check resistance of motor windings across the following J2 connector pinouts:

    **NOTE**: If the console has a cycle selector knob and 4 rotary switches, the motor size is 1/3 HP.

| Size | Motor Winding | J2 Pinout | Resistance |
|---|---|---|---|
| 1/4 HP | CW Winding | J2, 4 & 6 Lower harness connector, 8 & 9 | 5 to 9.5 |
| | CCW Winding | J2, 4 & 5 Lower harness connector, 8 & 10 | 5 to 9.5 |
| 1/3 HP | CW Winding | J2, 4 & 6 Lower harness connector, 8 & 9 | 3.5 to 6 |
| | CCW Winding | J2, 4 & 5 Lower harness connector, 8 & 10 | 3.5 to 6 |

   - ➢ If values are open or out of range, go to step 11.
   - ➢ If values are correct, go to step 15.
11. Tilt washer/dryer back to access drive system.
12. Visually check the mounting bracket and electrical connections to the motor and shifter. Verify that the wires between the motor and the harness are connected this way: Black-white/White, Orange/Yellow, and Red/Red.
    - ➢ If visual check passes, go to step 13.
    - ➢ If connections are loose, reconnect the electrical connections, reassemble motor cover, and repeat step 1.
13. With an ohmmeter, check the harness for continuity between the main control, motor, and run capacitor using the following test points.

| Motor Harness Check |
|---|
| Motor connector Pin 1 to chassis ground |
| Motor connector Pin 3 to lower harness connector Pin 10 to main control J2-5<br>Motor connector Pin 3 to run capacitor Pin 3 |
| Motor connector Pin 4 to lower harness connector Pin 9 to main control J2-6<br>Motor connector Pin 4 to run capacitor Pin 1 |
| Motor connector Pin 2 to lower harness connector Pin 8 to main control J2-4 |

   - ➢ If there is continuity, go to step 14.
   - ➢ If there is no continuity, replace the lower or upper washer harness (depending on where the issue was) and repeat step 1.

# For Service Technician Use Only

14. With an ohmmeter, check resistance of motor windings at the following motor connections.

    **NOTE**: If the console has a cycle selector knob and 4 rotary switches, the motor size is 1/3 HP.

| Size | Motor Winding | Motor Pinout | Resistance |
|---|---|---|---|
| 1/4 HP | CW Winding | Pins 4 & 2 | 5 to 9.5 |
| | CCW Winding | Pins 4 & 2 | 5 to 9.5 |
| 1/3 HP | CW Winding | Pins 4 & 2 | 3.5 to 6 |
| | CCW Winding | Pins 4 & 2 | 3.5 to 6 |

- ➢ If values are open or out of range, replace motor.
- ➢ If values are correct, go to step 15.

### Test Motor Run Capacitor/Inductor:

15. Test Motor Run Capacitor. **NOTE**: A faulty capacitor may cause the motor to "hum," not start, or turn slowly.
    a. Discharge the capacitor by touching the leads of a 20,000 Ω resistor to the two terminals.
    b. Disconnect the wires from the capacitor terminals.
    c. With an ohmmeter, measure across the terminals and note reading.
    - ➢ If a steady increase in resistance is noted, continue to step 16.
    - ➢ If the capacitor is either shorted or open, replace capacitor, calibrate, and repeat step 1.
16. If the preceding steps did not correct the motor problem, replace the main control.
    a. Unplug washer/dryer or disconnect power.
    b. Replace the main control.
    c. Reassemble all parts and panels.
    d. Plug in washer/dryer or reconnect power. Calibrate washer and perform Automatic Test to verify repair.

### PSC Drive Motor:

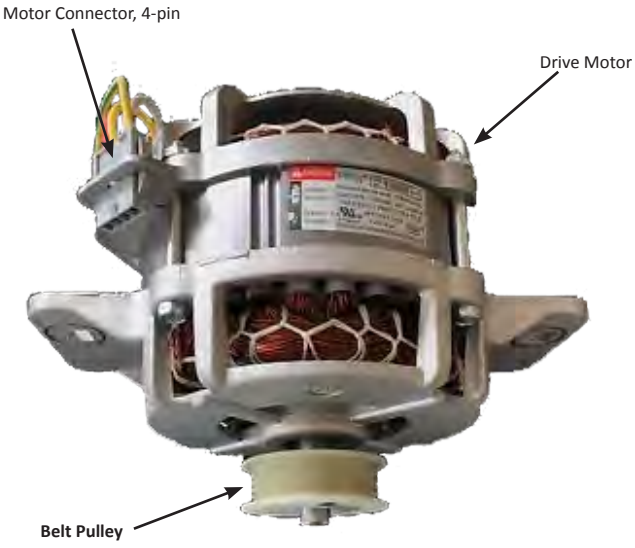
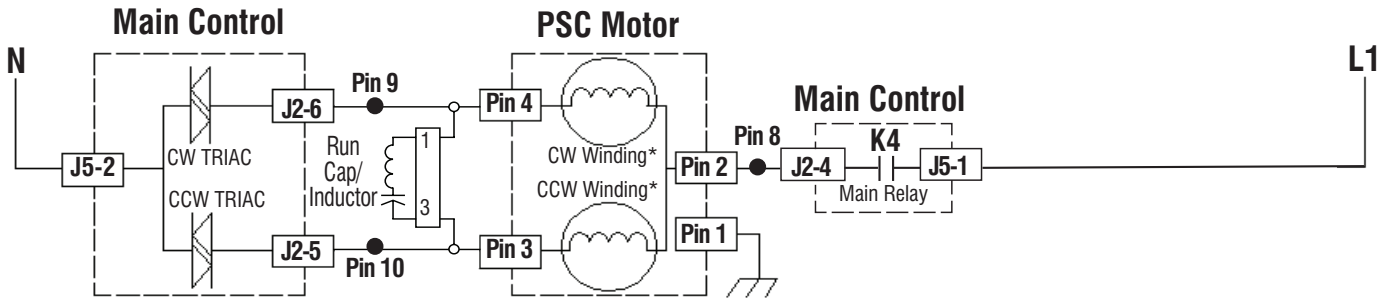



*Figure 1*

### Run Capacitor/Inductor:

*Figure 2*

## MOTOR ASSEMBLY




* 1/3 HP Motor – Each Winding 3.5 to 6 ohms/ * 1/4 HP Motor – Each Winding 5 to 9.5 ohms

*Figure 3*

# For Service Technician Use Only

**⚠ WARNING**

**Electrical Shock Hazard**

**Disconnect power before servicing.**

**Replace all parts and panels before operating.**

**Failure to do so can result in death or electrical shock.**

## TEST #4: Console and Indicators

### Console and Indicators Check:

This test is performed when any of the following situations occurs during "UI Test Mode" on page 2-4.

- None of the LEDs light up
- One or more Status LEDs are flashing
- Turning rotary switch does not toggle LED

### None of the LEDs light up:

1. Unplug washer/dryer or disconnect power.
2. Access the main control and visually check that ALL connectors are inserted all the way into their respective headers. See Figure 1.
3. Visually check that the main control assembly is properly inserted in the console.
4. If both visual checks pass, follow procedure under TEST #1, "Main Control" on page 3-5 to verify supply voltages.
5. To verify repair, activate the Service Diagnostic Mode, and then perform UI Test Mode on page 2-4.

### One or more Status LEDs are flashing:

If one or more of the status LEDs are flashing (on and off in 0.5 second intervals), refer to the following notes to identify the switch(es) in question. Reference the wiring diagram on page 3-4 when performing the following procedures.

a. Verify the switch connector is inserted all the way into the main control.

b. Check the harness between the switch and main control for continuity. Check for shorts.

c. Replace the switch.

**NOTE 1:** The number and location of rotary switches varies between makes and models.

**NOTE 2:** Regardless of location, switches are read from left to right, the left-most switch being #1.

**NOTE 3:** Each rotary switch and the cycle selector knob is represented by the following status LEDs:

- Rotary Switch #1 – toggles (1) Sense/Fill LED
- Rotary Switch #2 – toggles (2) Wash LED
- Rotary Switch #3 – toggles (3) Rinse LED
- Rotary Switch #4 – toggles (4) Drain/Spin LED
- Cycle Select Knob – toggles (5) Done LED

**NOTE 4:** Status LED names may vary between makes and models. Use LED # identification.

### Turning rotary switch does not toggle LED:

Perform the procedures under "One or more Status LEDs are flashing."

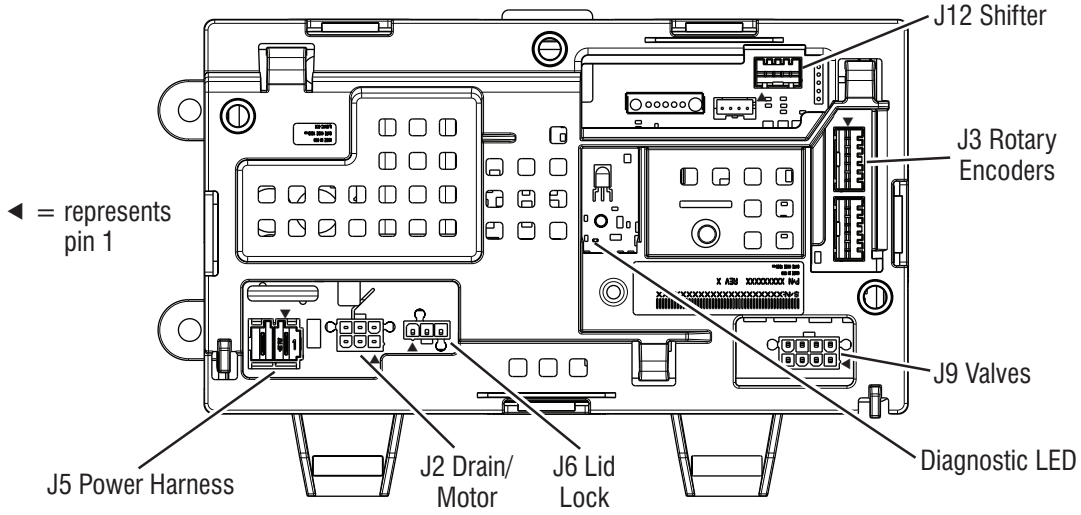



*Figure 1*

# For Service Technician Use Only

**⚠ WARNING**

**Electrical Shock Hazard**

**Disconnect power before servicing.**

**Replace all parts and panels before operating.**

**Failure to do so can result in death or electrical shock.**

## TEST #5: Water Level

This test checks the water level sensing components. The washer has an on-board pressure transducer. **NOTE**: Usually, if the pressure transducer malfunctions, the washer will generate a long fill, or long drain error.

1. Check the functionality of the pressure transducer by running a small load cycle. The valves should turn off automatically after sensing the correct water level in the tub. The following steps assume that this step was unsuccessful.
2. Drain the tub until all water has been removed.
3. Unplug washer/dryer or disconnect power.
4. Remove console to access controls.
5. Check hose connections between the pressure transducer (Figure 1), the pressure dome attached to the tub (Figure 2), and the barbed connector between hoses is correctly assembled. **NOTE**: the barbed connector is located in the dryer compartment to the right of the motor (see Figure 3).

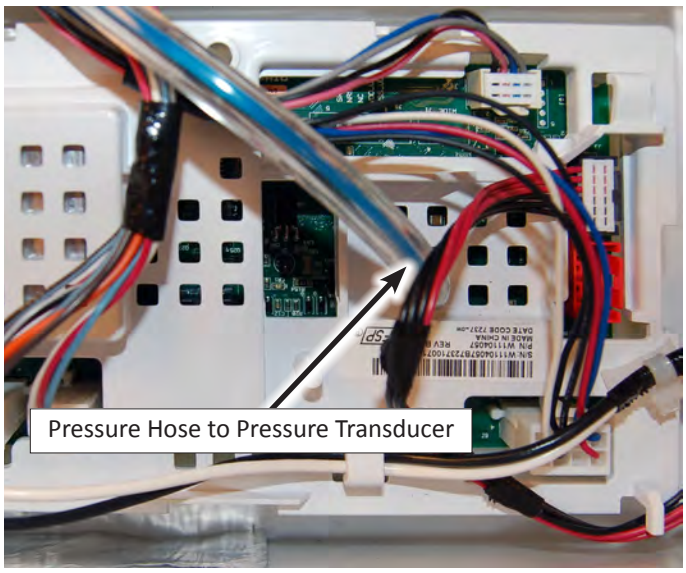



***Figure 1***

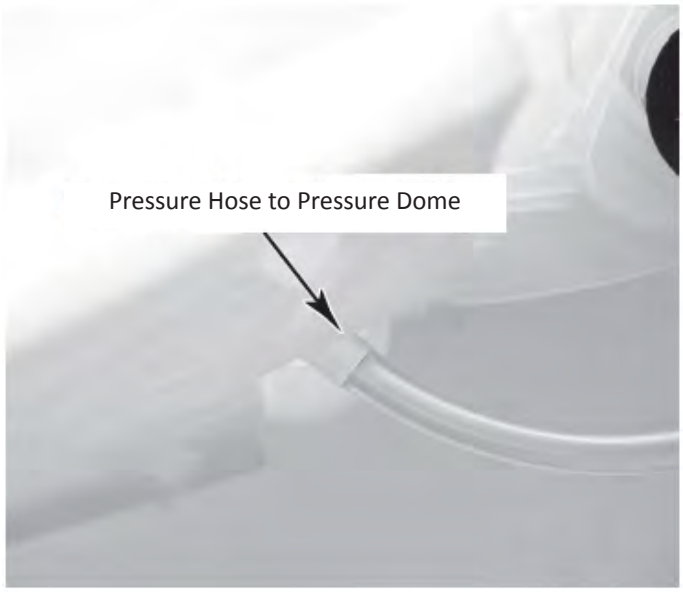



***Figure 2***

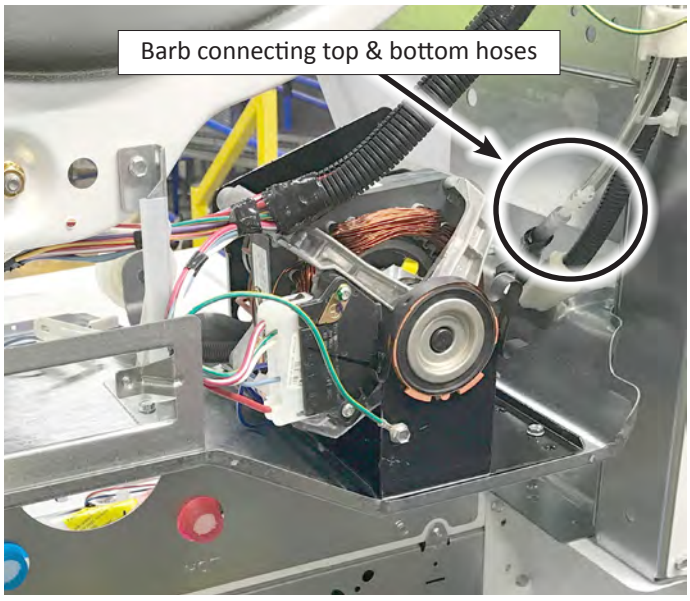



***Figure 3***

6. Check to ensure hose is routed correctly in the dryer and the lower washer cabinet and not pinched or crimped by the back panel.
7. Verify there is no water, suds, or debris in the hose or dome. Disconnect hose from main control and blow into hose to clear water, suds, or debris.
8. Check hose for leaks. Replace if needed.
9. Replace the main control and calibrate washer. Perform Automatic Test to verify repair.

# For Service Technician Use Only

**⚠ WARNING**

**Electrical Shock Hazard**

**Disconnect power before servicing.**

**Replace all parts and panels before operating.**

**Failure to do so can result in death or electrical shock.**

## TEST #6: Drain Pump

Perform the following checks if washer does not drain.

**NOTE**: Refer to Figure 1, "Drain Pump Strip Circuit" for tests and measurements.

**IMPORTANT**: Drain water from tub before accessing bottom of washer.

1. Check for obstructions in the usual areas. Clean and then perform step 2.
2. Check the drain pump and electrical connections by performing the Drain Test under Manual Test Mode on page 2-11. The following steps assume that this step was unsuccessful.
3. Unplug washer/dryer or disconnect power.
4. Remove console to access main control.
5. Visually check that the J2 connector is inserted all the way into the main control.
   - ➢ If visual check passes, go to step 6.
   - ➢ If connector is not inserted properly, reconnect J2 and repeat step 2.
6. Remove connector J2 from main control. With an ohmmeter, verify resistance values shown below across the following J2 connector pinouts:

| Component | J2 Connector Pinout |
|---|---|
| Drain Pump | J2, 2 & 3 |

Resistance should be 14–25 Ω.

- ➢ If values are open or out of range, check lower harness connector, pin 7 & 6. If values are still open or out of range, go to step 7.
- ➢ If values are correct, go to step 11.

7. Tilt washer/dryer back to access drain pump. Verify pump is free from obstructions.
8. Visually check the electrical connections at the drain pump.
   - ➢ If visual check passes, go to step 9.
   - ➢ If connections are loose, reconnect the electrical connections and repeat step 2.
9. With an ohmmeter, check harness for continuity between the drain pump and main control. See chart below.

| Main Control to Drain Pump |
|---|
| Drain pump Pin 1 to lower harness connector Pin 7 to main control J2-3 |
| Drain pump Pin 2 to lower harness connector Pin 6 to main control J2-2 |

- ➢ If there is continuity, go to step 10.
- ➢ If there is no continuity, replace the lower or upper washer harness (depending on where the issue was) and repeat step 2.

10. With an ohmmeter, measure the resistance across the two pump terminals. Resistance should be 14–25 Ω.
    - ➢ If values are open or out of range, replace the pump motor.
    - ➢ If the resistance at the pump motor is correct, go to step 11.
11. If there is a stuck pump, check for a blown board. If the board has a blown R69 surge resistor, check for stuck or shorted pump motor; if OK, check all other loads with input to the board.
12. If the preceding steps did not correct the drain problem, replace the main control.
    a. Unplug washer/dryer or disconnect power.
    b. Replace the main control.
    c. Reassemble all parts and panels.
    d. Plug in washer/dryer or reconnect power. Calibrate washer and perform Automatic Test to verify repair.

### DRAIN PUMP

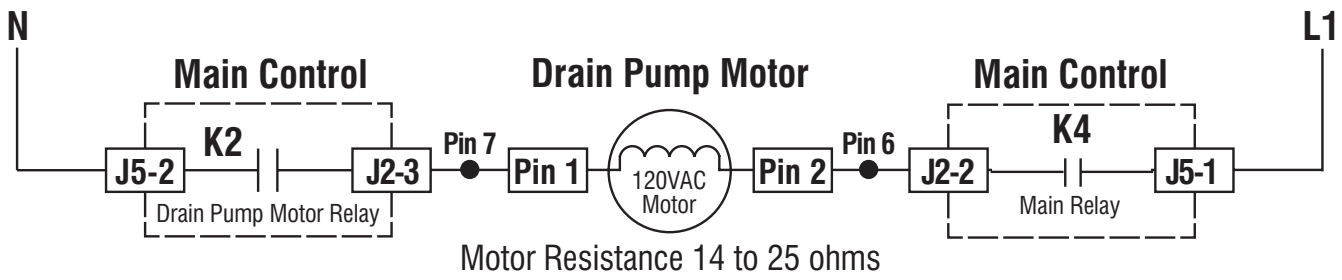



*Figure 1*

# For Service Technician Use Only

**⚠ WARNING**

**Electrical Shock Hazard**

**Disconnect power before servicing.**

**Replace all parts and panels before operating.**

**Failure to do so can result in death or electrical shock.**

## TEST #7: Lid Lock

Perform the following checks if the washer does not lock (or unlock).

1. Perform the Lid Lock test under Manual Test Mode on page 2-11. The following steps assume that this step was unsuccessful.
2. Check lid lock mechanism for obstruction or binding. Repair as necessary.
3. Unplug washer/dryer or disconnect power.
4. Remove console to access main control.
5. Visually check that the J6 connector is inserted all the way into the main control.
   - ➢ If visual check passes, go to step 6.
   - ➢ If connector is not inserted properly, reconnect J6 and repeat step 1.
6. Remove connector J6 from main control. With an ohmmeter, verify lid lock resistance values shown in the following chart across the following J6 connector pinouts:

| LID LOCK RESISTANCE | | | | |
|---|---|---|---|---|
| **Component** | **Resistance** | **Contacts Measured** | | **Lid Lock Connection** |
| Lock Switch Solenoid | Lid Closed = 85 to 155 ohms | J6-2 | J6-1 | Pin 2 & 3 |
| Lock Switch | Locked = 0 ohms<br>Unlocked = Open Circuit | J6-3 | J6-2 | Pin 1 & 2 |
| Lid Switch | Lid Open = Open Circuit | J6-2 | J6-1 | Pin 2 & 3 |

   - ➢ If resistance values are good, go to step 7.
   - ➢ If switch measurements do not match the values shown in the table for unlocked (or locked) condition, verify the connection with the upper washer harness according to the chart. If the connection is OK, a problem exists in the lid lock. Replace the lid lock mechanism.
7. If the preceding steps did not correct the lock problem, replace the main control.
   a. Unplug washer/dryer or disconnect power.
   b. Replace the main control.
   c. Reassemble all parts and panels.
   d. Plug in washer/dryer or reconnect power. Calibrate washer and perform Automatic Test to verify repair.

### Lid Lock Assembly:

*Figure 2*

### LID LOCK

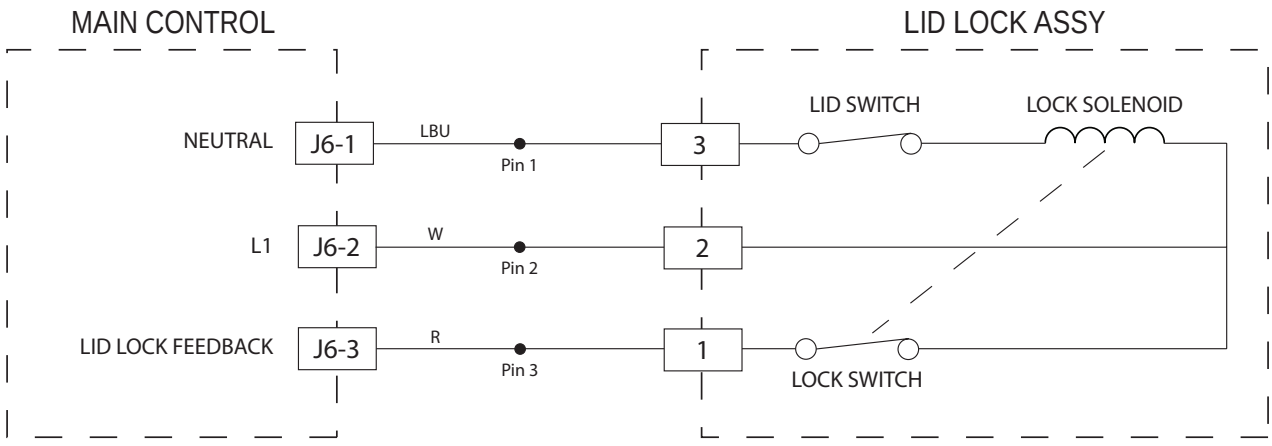



*Figure 1*

# Notes

# Section 4: Testing – Dryer

This section provide wiring diagrams, timer, specifications, testing procedures, and strip circuits for the 27” Stacked Laundry Center “Dryer.”


- Testing: Safety Information
- Dryer Troubleshooting Guide
- Wiring Diagram - Standard Vent Electric Dryer
- Wiring Diagram - Standard Vent Gas Dryer
- Wiring Diagram - Long Vent Electric Dryer
- Wiring Diagram - Long Vent Gas Dryer
- TEST #1: Supply Connections
- TEST #2: Motor Circuit
- TEST #3: Heat System
- TEST #3a: Thermal Fuse
- TEST #3b: Thermal Cut-Off
- TEST #3c: Gas Valve
- TEST #3d: Inline Thermal Fuse
- TEST #4: Moisture Sensor
- TEST #5: Door Switch
- Notes

# For Service Technician Use Only

**⚠ DANGER**

**Electrical Shock Hazard**

**Only authorized technicians should perform diagnostic voltage measurements.**

**After performing voltage measurements, disconnect power before servicing.**

**Failure to follow these instructions can result in death or electrical shock.**

**⚠ WARNING**

**Electrical Shock Hazard**

**Disconnect power before servicing.**

**Replace all parts and panels before operating.**

**Failure to do so can result in death or electrical shock.**

## Voltage Measurement Safety Information

**When performing live voltage measurements, you must do the following:**

- Verify the controls are in the off position so that the appliance does not start when energized.
- Allow enough space to perform the voltage measurements without obstructions.
- Keep other people a safe distance away from the appliance to prevent potential injury.
- Always use the proper testing equipment.
- After voltage measurements, always disconnect power before servicing.

**IMPORTANT: Electrostatic Discharge (ESD) Sensitive Electronics**
**ESD problems are present everywhere. Most people begin to feel an ESD discharge at approximately 3000V. It takes as little as 10V to destroy, damage, or weaken the main control assembly. The new main control assembly may appear to work well after repair is finished, but a malfunction may occur at a later date due to ESD stress.**

- **Use an anti-static wrist strap. Connect wrist strap to green ground connection point or unpainted metal in the appliance**

**-OR-**

- **Touch your finger repeatedly to a green ground connection point or unpainted metal in the appliance.**
- **Before removing the part from its package, touch the anti-static bag to a green ground connection point or unpainted metal in the appliance.**
- **Avoid touching electronic parts or terminal contacts; handle electronic control assembly by edges only.**
- **When repackaging main control assembly in anti-static bag, observe above instructions.**

**IMPORTANT SAFETY NOTICE — "For Technicians only"**

**This service data sheet is intended for use by persons having electrical, electronic, and mechanical experience and knowledge at a level generally considered acceptable in the appliance repair trade. Any attempt to repair a major appliance may result in personal injury and property damage. The manufacturer or seller cannot be responsible, nor assume any liability for injury or damage of any kind arising from the use of this data sheet.**

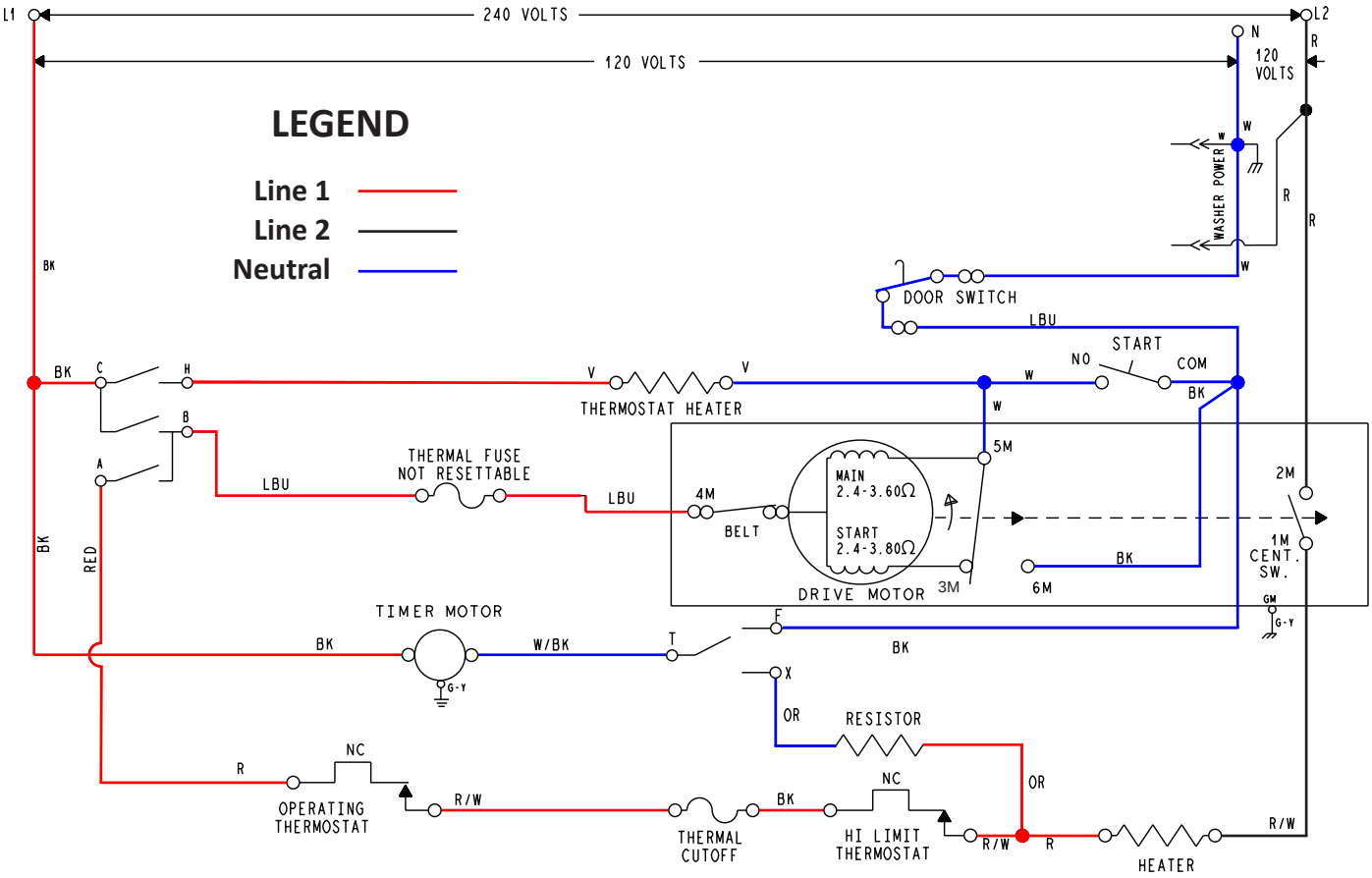
# For Service Technician Use Only

## Dryer Troubleshooting Guide

| Problem | Possible Cause | Checks & Tests |
|---|---|---|
| **Won't Power Up**<br>• No operation<br>• No button response | No power to dryer. | Check power at outlet, check circuit breakers, fuses, or junction box connections. |
| | Connection problem between AC plug and power harness. | See Test #1: Supply Connections, page 4-8. |
| **Won't Start Cycle**<br>• No response when Start button is pressed | Door not fully closed or striking the door latch. | Be sure the door is completely closed, then press and hold the START button. |
| | Door switch problem. | See Test #5: Door Switch, page 4-14. |
| | Drive belt/belt switch problem. | See Test #2: Motor Circuit, page 4-9. |
| | Thermal fuse/motor problem. | See Test #2: Motor Circuit, page 4-9. |
| **Won't Shut Off When Expected** | Poor airflow. | Check lint screen and exhaust vent. Clean if necessary. |
| | Moisture sensor problem. | See Test #4: Moisture Sensor, page 4-13 (long vent models only). |
| | Heat system problem. | See Test #3: Heat System, page 4-10. |
| **Drum Won't Spin** | Drive belt/belt switch problem. | See Test #2: Motor Circuit, page 4-9. |
| | Thermal fuse problem. | See Test #3a: Thermal Fuse, page 4-11. |
| | Door switch problem. | See Test #5: Door Switch, page 4-14. |
| | Motor problem. | See Test #2: Motor Circuit, page 4-9. |
| **Won't Heat** | Check Installation. | Verify proper dryer installation. |
| | Heat system malfunction. | See Test #3: Heat System, page 4-10. |
| | Inline thermal fuse problem. | See Test #3d: Inline Thermal Fuse, page 4-11. |
| **Heats In Air Cycle** | Heater coil shorted. | See Test #3: Heat System, page 4-10. |
| | Heater relay shorted. | See Test #3: Heat System, page 4-10. |
| | Heater system problem. | See Test #3: Heat System, page 4-10. |
| **Shuts Off Before Clothes Are Dry** | Lint screen full. | Clean if necessary. Refer customer to Use and Care Guide. |
| | Exhaust vent clogged. | Clean if necessary. Refer customer to Use and Care Guide. |
| | Moisture sensor problem. | See Test #4: Moisture Sensor, page 4-13 (long vent models only). |

# For Service Technician Use Only

## Wiring Diagram - Standard Vent Electric Dryer




| TIMER POSITION | T-F | T-X | C-H | C-B | C-B-A |
|---|---|---|---|---|---|
| | DRYER TIMER CONTACTS | | | | |
| NORMAL | | | | | |
| DELICATE | | | | | |
| AIR ONLY | (0) | (0) | | | |
| END OF CYCLE | | | | | |
| TIMED DRY | | | | | |

**LEGEND**

= OPEN
= CLOSED
= DOESN'T MATTER
(0) = EITHER (NOT BOTH)
* = WHERE SPECIFIED

## Dryer Timer - Standard Vent

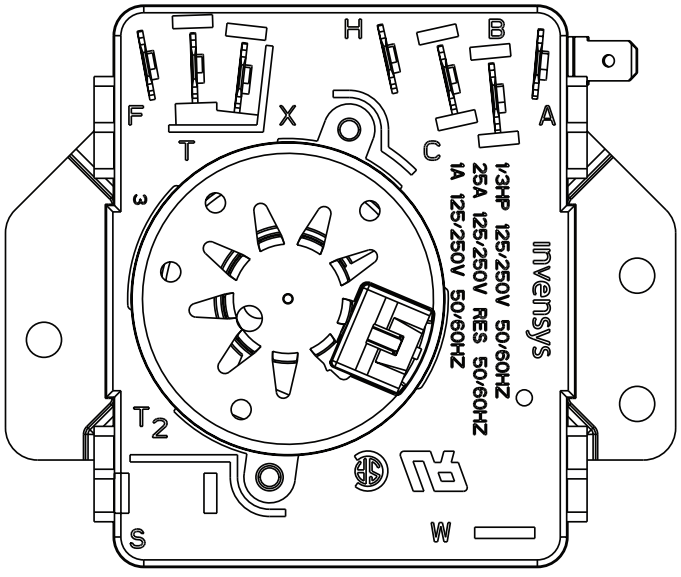
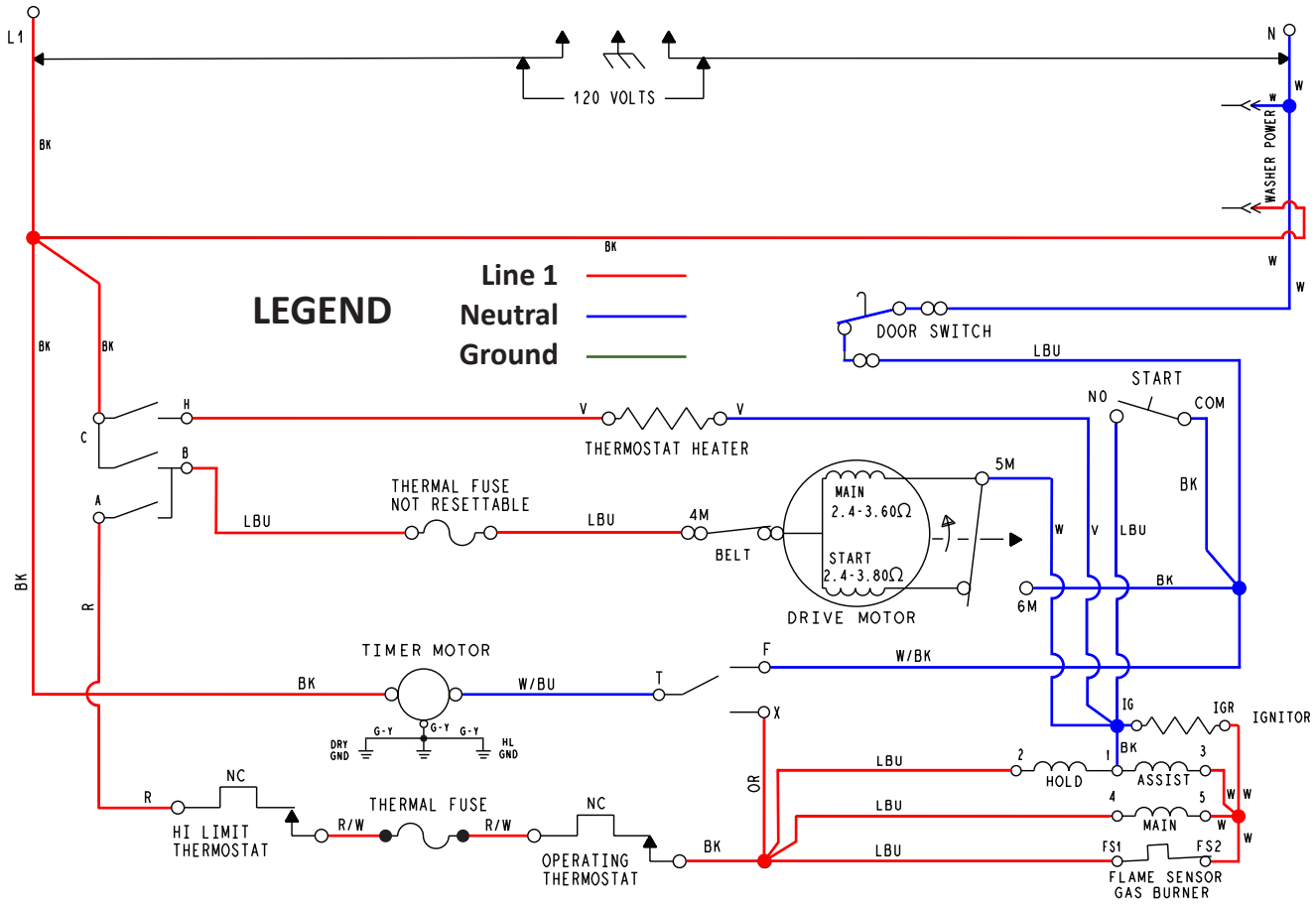



*Figure 1*

# For Service Technician Use Only

## Wiring Diagram - Standard Vent Gas Dryer




| TIMER POSITION | T-F | T-X | C-H | C-B | C-B-A |
|---|---|---|---|---|---|
| NORMAL | | ■ | | ■ | ■ |
| DELICATE | | ■ | ■ | ■ | ■ |
| AIR ONLY | (0) | (0) | ■ | ■ | |
| END OF CYCLE | | ■ | | ■ | |
| TIMED DRY | ■ | | | ■ | ■ |

DRYER TIMER CONTACTS

**LEGEND**

- = OPEN
- ■ = CLOSED
- ■ = DOESN'T MATTER
- (0) = EITHER (NOT BOTH)
- * = WHERE SPECIFIED

## Dryer Timer - Standard Vent

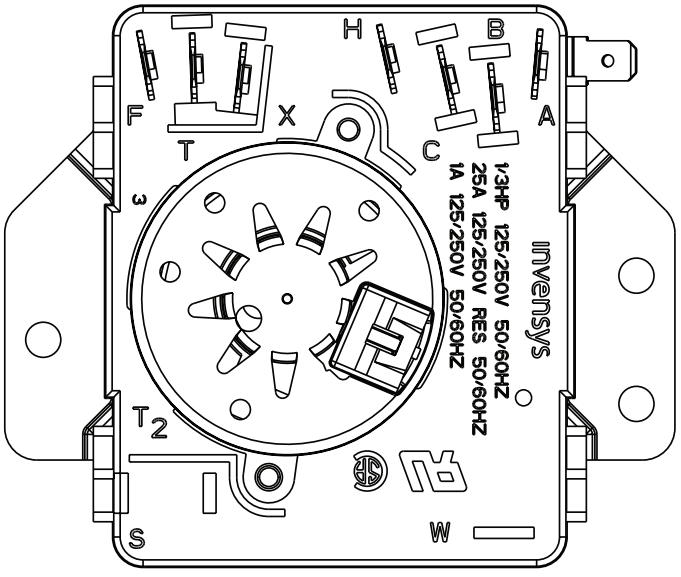
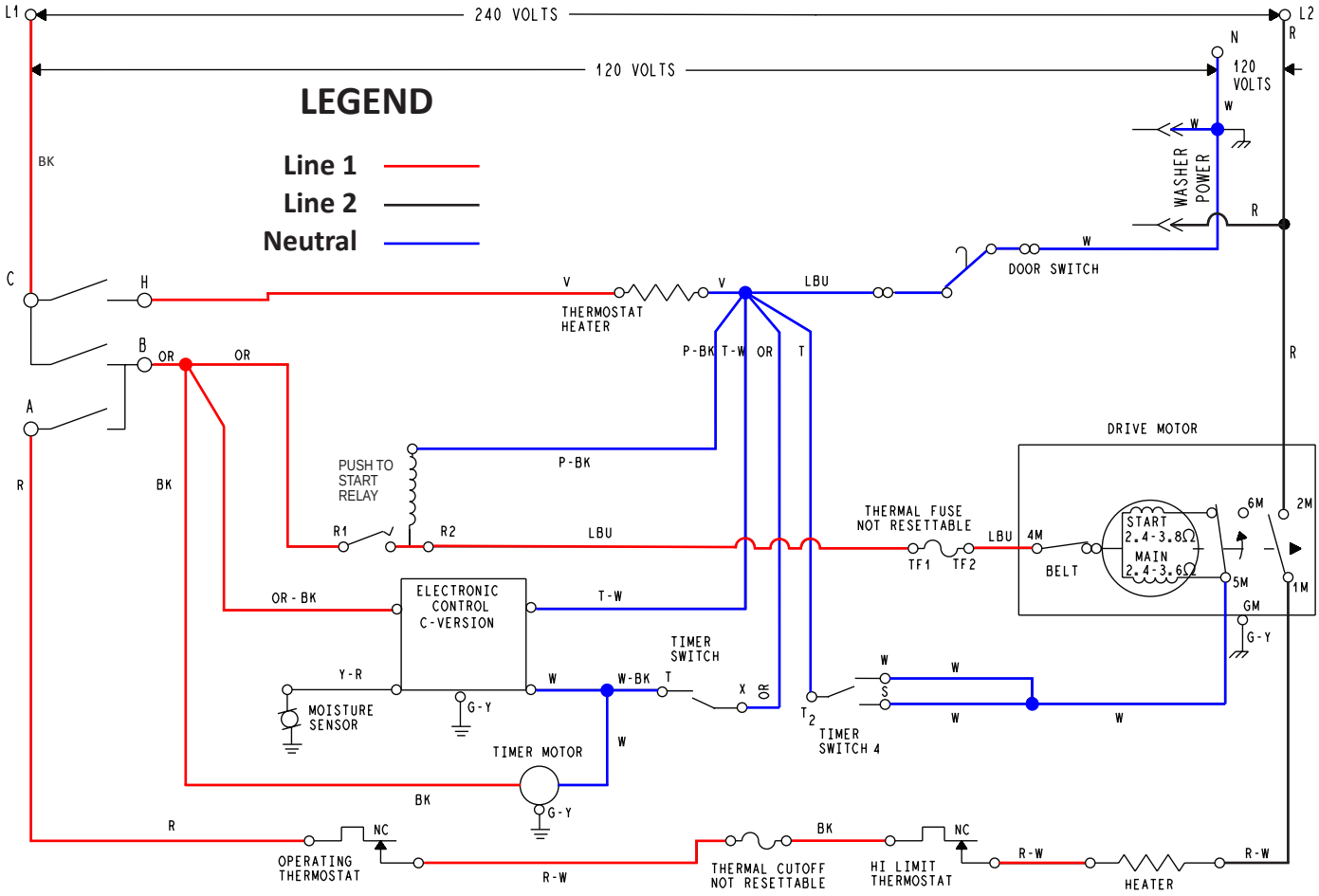



*Figure 1*

# For Service Technician Use Only

## Wiring Diagram - Long Vent Electric Dryer




## Dryer Timer - Long Vent

| TIMER POSITION | $T_2$-S | T-X | C-H | C-B | C-B-A | $T_2$-W | |
|---|---|---|---|---|---|---|---|
| | DRYER TIMER CONTACTS | | | | | | |
| NORMAL | ■ | | | ■ | ■ | | |
| DELICATE | ■ | | ■ | ■ | ■ | | |
| AIR ONLY/COOL DOWN | ■ | ■ | ■ | ■ | | | |
| END OF CYCLE | | ■ | | ■ | | | |
| TIMED DRY | ■ | ■ | | ■ | ■ | | |
| WRINKLE GUARD | | ■ | ■ | ■ | | + | |

**LEGEND**

- = OPEN
- ■ = CLOSED
- ■ = DOESN'T MATTER
- + = CLOSED INTERMITTENTLY

**"+" (Closed Intermittently)**
A Cam in the timer opens and closes contacts "$T_2$-W" to intermittently tumble clothes in the dryer to prevent wrinkling.

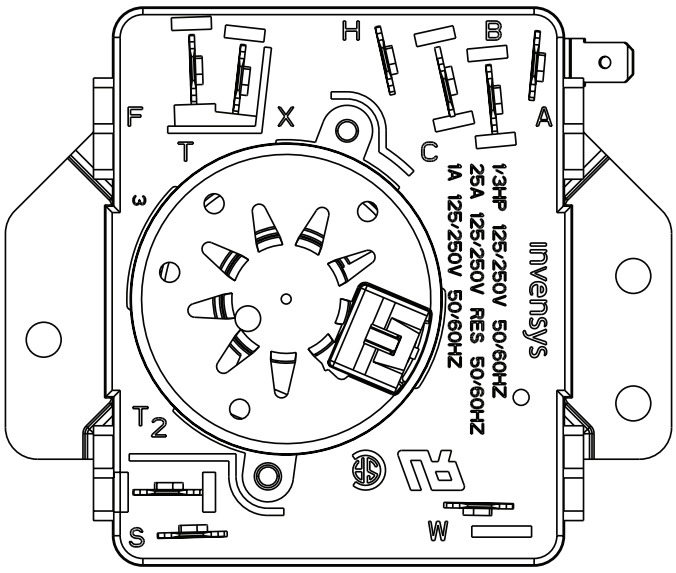
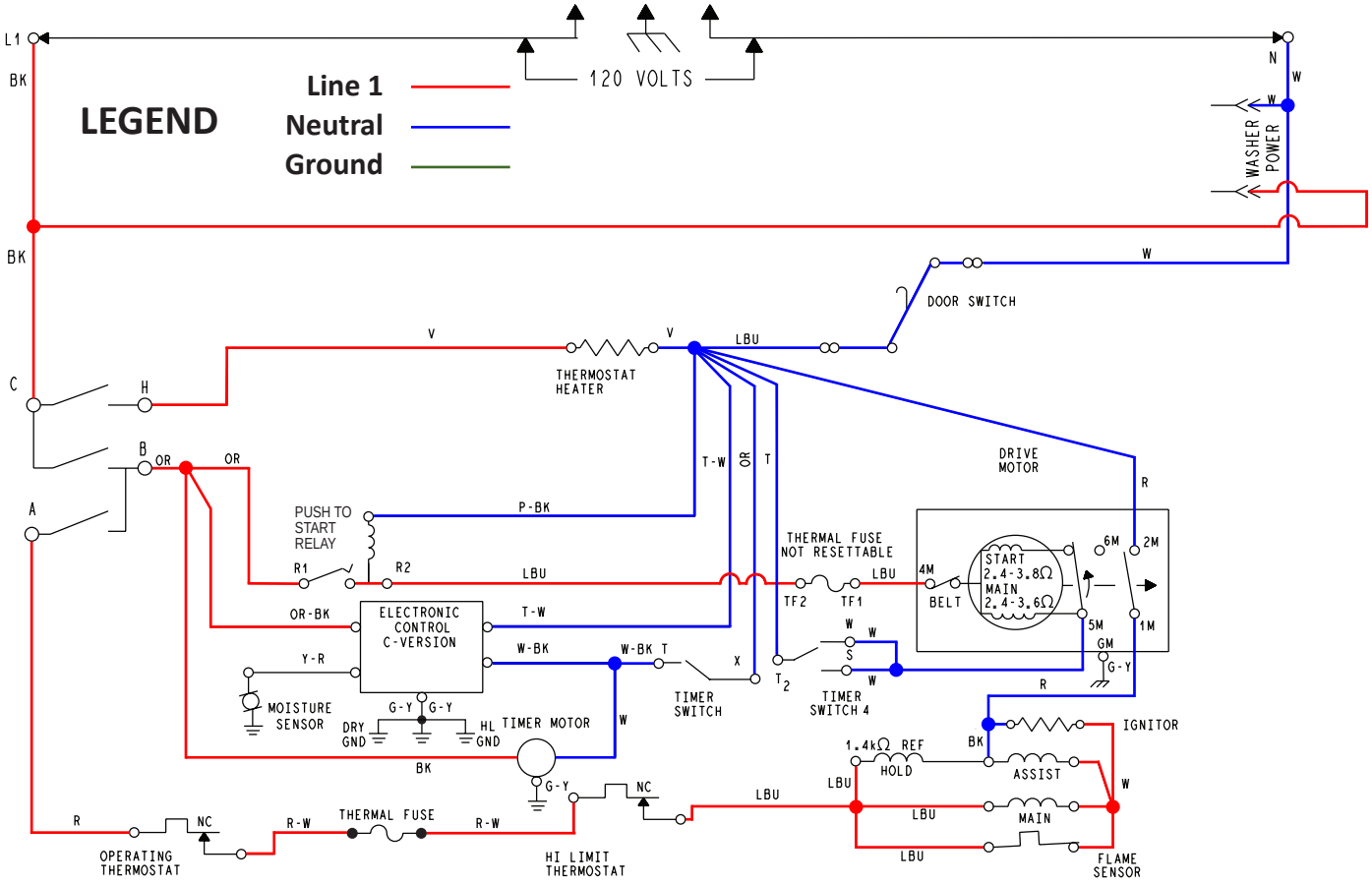



*Figure 1*

# For Service Technician Use Only

## Wiring Diagram - Long Vent Gas Dryer




| TIMER POSITION | $T_2$-S | T-X | C-H | C-B | C-B-A | $T_2$-W | |
|---|---|---|---|---|---|---|---|
| | DRYER TIMER CONTACTS | | | | | | |
| NORMAL | ■ | | | ■ | ■ | | |
| DELICATE | ■ | | ■ | ■ | ■ | | |
| AIR ONLY/COOL DOWN | ■ | ■ | ■ | ■ | | | |
| END OF CYCLE | | ■ | | ■ | | | |
| TIMED DRY | ■ | ■ | | ■ | ■ | | |
| WRINKLE GUARD | | ■ | ■ | ■ | | + | |

**LEGEND**

- = OPEN
- ■ = CLOSED
- ■ = DOESN'T MATTER
- \+ = CLOSED INTERMITTENTLY

**"+" (Closed Intermittently)**
A Cam in the timer opens and closes contacts "$T_2$-W" to intermittently tumble clothes in the dryer to prevent wrinkling.

## Dryer Timer - Long Vent

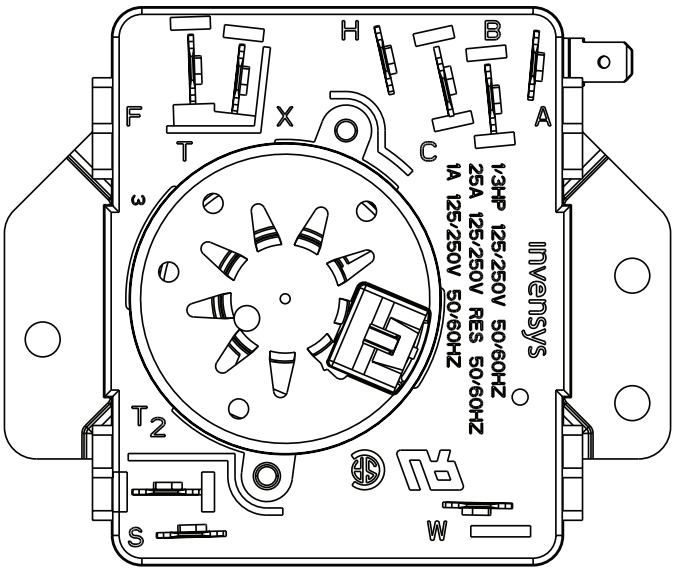



*Figure 1*

# For Service Technician Use Only

**⚠ DANGER**

**Electrical Shock Hazard**

**Only authorized technicians should perform diagnostic voltage measurements.**

**After performing voltage measurements, disconnect power before servicing.**

**Failure to follow these instructions can result in death or electrical shock.**

## TEST #1: Supply Connections

This test assumes that proper voltage is present at the outlet, and for U.S. electric dryer installations, a visual inspection indicates that the power cord is securely fastened to the terminal block, and for U.S. and Canadian gas dryer installations, that the power cord is securely fastened to the wire harness connection.

### ELECTRIC DRYER (U.S. Installations):

1. Unplug dryer or disconnect power.
2. Remove the cover plate from the lower center portion of the back of the dryer.
3. With an ohmmeter, check for continuity between the neutral (N) terminal of the plug and the center contact on the terminal block.
   - ➢ If there is no continuity, replace the power cord and test the dryer.
   - ➢ If there is continuity, go to step 4.
4. In a similar way, check which terminal of the plug is connected to the left-most contact on the terminal block and make a note of it. This will be L1 (black wire) in the wiring diagram.
   - ➢ When this is found, go to step 5.
   - ➢ If neither of the plug terminals have continuity with the left-most contact of the terminal block, replace the power cord and retest dryer.
5. Access the machine electronics without disconnecting any wiring to the timer.
6. With an ohmmeter, check for continuity between the L1 terminal of the plug (found in step 4) and pin C on the timer.
   - ➢ If there is continuity, go to step 7.
   - ➢ If there is no continuity, check that wires to the terminal block are mechanically secure. If so, replace the main wire harness and test the dryer.
7. Check for continuity between the neutral (N) terminal of the plug and the door switch.
   - ➢ If there is continuity, go to step 8.
   - ➢ If there is no continuity, and the mechanical connections of the wire are secure, replace the main wire harness.
8. Visually check that ALL connectors are fully inserted into the timer and the Start switch.
9. Reassemble all parts and panels.
10. Plug in dryer or reconnect power.

### ELECTRIC DRYER (Canadian Installations):

1. Unplug dryer or disconnect power.
2. Remove the cover plate from the lower center portion of the back of the dryer.
3. Access the machine electronics without disconnecting any wiring to the timer.
4. With an ohmmeter, check the continuity from the L1 plug terminal of the power cord to pin C on the timer and from the N plug terminal of the power cord to the door switch.
   - ➢ If continuity exists for both connections, go to step 6.
   - ➢ If an open circuit is found, check the integrity of the connections of the power cord to the harness in the dryer and the integrity of the power cord itself.
5. If it is necessary to replace the power cord, remove the retaining clip that secures the cord to the back panel. Disconnect the cord from the main harness and the ground wire from the rear panel, then pull out the power cord.
6. Visually check that ALL connectors are fully inserted into the timer and the Start switch.
7. Reassemble all parts and panels.
8. Plug in dryer or reconnect power.

### GAS DRYER (U.S. and Canadian Installations):

1. Unplug dryer or disconnect power.
2. Remove the cover plate from the lower center portion of the back of the dryer.
3. Check that the power cord is firmly connected to the dryer's wire harness.
4. Access the machine electronics without disconnecting any wiring to the timer.
5. With an ohmmeter, check for continuity between the neutral (N) terminal of the plug and the door switch.
   - ➢ If there is continuity, go to step 6.
   - ➢ If there is no continuity or if there is an open circuit, replace the power cord. Otherwise, go to step 6.
6. In a similar way, check for continuity between the L1 terminal of the plug and pin C on the timer.
   - ➢ If there is continuity, go to step 7.
   - ➢ If there is no continuity or if there is an open circuit, replace the power cord. Otherwise, replace the main harness.
7. Visually check that ALL connectors are fully inserted into the timer and the Start switch.
8. Reassemble all parts and panels.
9. Plug in dryer or reconnect power.

# For Service Technician Use Only

**⚠ WARNING**

**Electrical Shock Hazard**

**Disconnect power before servicing.**

**Replace all parts and panels before operating.**

**Failure to do so can result in death or electrical shock.**

## TEST #2: Motor Circuit

This test will check the wiring to the motor and the motor itself.

1. Unplug dryer or disconnect power.
2. Check for loose, worn, or damaged drum belt—repair as necessary.
3. Door Switch problems can be uncovered by following procedure under TEST #5: Door Switch, page 4-14.
4. Check the wiring and components in the motor circuit by referring to the appropriate wiring diagram on pages 4-4 to 4-7 or the Motor Strip Circuit below (see Figure 1).

   Check the thermal fuse. See TEST #3a: Thermal Fuse, page 4-11.

   Continue with step 5 to test the remaining components in the motor circuit.
5. Check the drive motor and belt switch. Slowly remove the drum belt.
6. Remove the white connector from the drive motor switch.
7. Remove the bare copper wire terminal from pin 5 of black drive motor switch.
8. Using the appropriate wiring diagram on pages 4-4 to 4-7, check for the resistance values of the motor's Main and Start winding coils as shown in the following table.

**NOTE**: Main and Start winding coils must be checked at the motor.

| Winding | Resistance in ohms | Contact Points of Measurements |
|---|---|---|
| MAIN | 2.4 - 3.6 | Lt Blue wire in back at pin 4 and bare copper wire terminal removed from pin 5 of black drive motor switch |
| START | 2.4 - 3.8 | Lt Blue wire in back at pin 4 and bare copper wire terminal on pin 3 of black drive motor switch |

- If the resistance at the motor is correct, there is an open circuit between the motor and the timer. Check for a belt switch problem (see step 9) and check and repair the main wiring harness.
- If the Main or Start winding resistance is much greater or less than the values listed in the table above, replace the motor.

9. Check the belt switch by measuring resistance between the two light blue wires in the belt switch connector block while pushing up the belt switch pulley.
   - If the resistance reading goes from open to a few ohms as pulley arm closes the switch, belt switch is good. If not, replace the belt switch.
   - If belt switch is good and there is still an open circuit, check and repair the main wiring harness.
10. Reassemble all parts and panels.
11. Plug in dryer or reconnect power.

**Pluggable Drive Motor Switch**

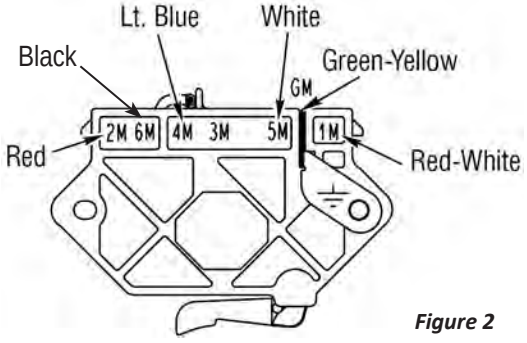



*Figure 2*

**MOTOR CIRCUIT**

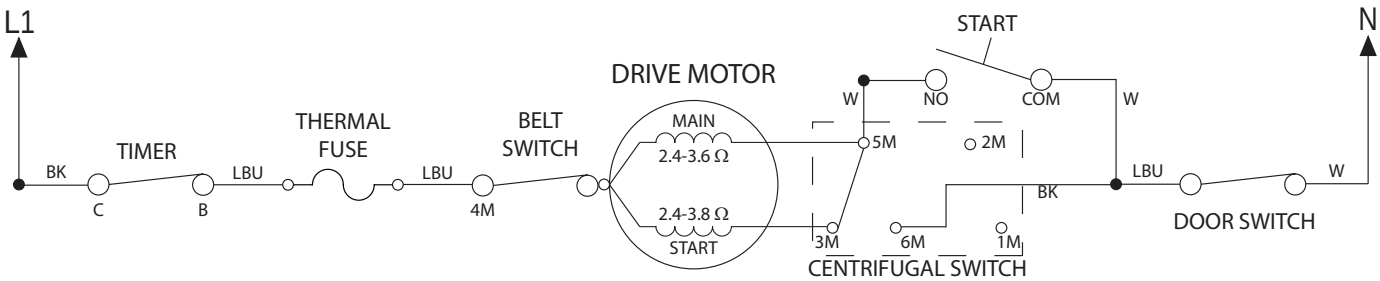



*Figure 1 - Motor Strip Circuit*

# For Service Technician Use Only

**⚠ DANGER**

**Electrical Shock Hazard**

**Only authorized technicians should perform diagnostic voltage measurements.**

**After performing voltage measurements, disconnect power before servicing.**

**Failure to follow these instructions can result in death or electrical shock.**

## TEST #3: Heat System

This test is performed when either of the following situations occurs:

- **Dryer does not heat**
- **Heat will not shut off**

This test checks the components making up the heating circuit.

### Dryer does not heat

**Electric dryer: (See Figure 1 below)**

1. Unplug dryer or disconnect power.
2. Remove top front and front access panels to access machine electronics and thermal components.
3. Using an ohmmeter and referring to the wiring diagram, measure the resistance from timer terminal A to the terminal at the heater (red/white).
   - ➢ If the resistance is about 10 Ω, go to step 5.
   - ➢ If an open circuit is detected, go to step 4.
4. Visually check the wire connections to the operating thermostat, thermal cut-off, high limit thermostat, and heater. If the connections look good, check for continuity across each of these components.
   - ➢ Replace the heater if it is electrically open.
   - ➢ Replace both the thermal cut-off and high limit thermostat if either the thermal cut-off or high limit thermostat is electrically open.
   - ➢ Replace the operating thermostat if it is electrically open.
5. If the preceding steps did not correct the problem and L1 and L2 were both detected, replace the timer.
6. Reassemble all parts and panels.
7. Plug in dryer or reconnect power.

**Gas dryer: (See Figure 2, page 4-11))**

1. Verify that the gas supply to the dryer is turned on.
2. Unplug dryer or disconnect power.
3. Perform TEST #3a: Thermal Fuse on page 4-11. If the thermal fuse is OK, go to step 4.
4. Locate the high limit thermostat. Measure the continuity through it by connecting the meter probes to the red and black wire terminals.
   - ➢ If there is an open circuit, replace the high limit thermostat.
   - ➢ Otherwise, go to step 5.
5. Perform TEST #3c: Gas Valve on page 4-12. If the gas valve is OK, go to step 6.
6. If the preceding steps did not correct the problem, suspect the centrifugal switch before replacing the timer.
7. Reassemble all parts and panels.
8. Plug in dryer or reconnect power.

### Heat will not shut off:

1. Unplug dryer or disconnect power.
2. Remove top front and front access panels to access machine electronics and thermal components.
3. Check heater coil for a short to ground (usually inside the heater box). Repair or replace if necessary.
4. Plug in dryer or reconnect power.
5. Run an “AIR” only timed dry cycle (no heat). With a voltmeter set to AC, connect voltmeter to timer terminals C and A and measure the voltage across terminals C and A.
   - ➢ If voltage is present (~240 VAC for electric models, ~120 VAC for gas models), heat system is working normally.
   - ➢ If little or no voltage is present, the heater is activated. Unplug dryer or disconnect power and replace the timer.
6. Unplug dryer or disconnect power.
7. Reassemble all parts and panels.
8. Plug in dryer or reconnect power.

### ELECTRIC DRYER HEATER CIRCUIT

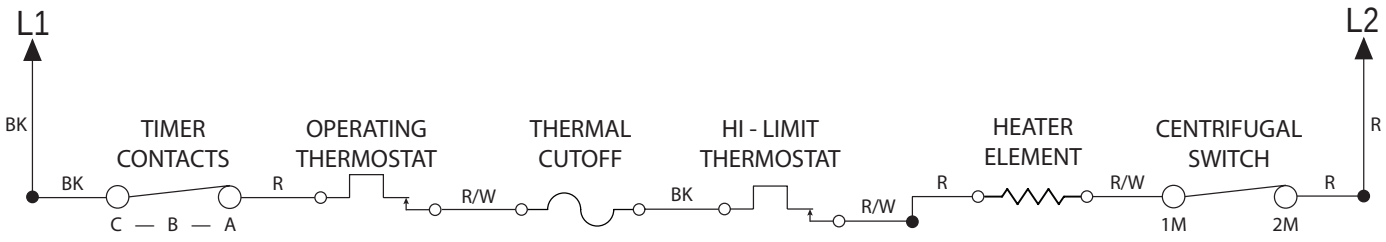



*Figure 1 - Electric Dryer Strip Circuit*

# For Service Technician Use Only

**⚠ DANGER**

**Electrical Shock Hazard**

**Only authorized technicians should perform diagnostic voltage measurements.**

**After performing voltage measurements, disconnect power before servicing.**

**Failure to follow these instructions can result in death or electrical shock.**

## TEST #3a: Thermal Fuse

The thermal fuse is wired in series with the dryer drive motor.

1. Unplug dryer or disconnect power.
2. Access the thermal fuse by removing the front access panel. Thermal Fuse is located on blower housing.
3. Using an ohmmeter, check the continuity across the thermal fuse.
   - ➢ If the ohmmeter indicates an open circuit, replace the thermal fuse.

## TEST #3b: Thermal Cut-Off

### (Electric Dryer)

If the dryer does not produce heat, check the status of the thermal cut-off.

1. Unplug dryer or disconnect power.
2. Access the thermal cut-off by removing the front access panel. Thermal Cut-Off (and High Limit Thermostat) is located on the heater element housing.
3. Using an ohmmeter, check the continuity across the thermal cut-off.
4. If the ohmmeter indicates an open circuit, perform the following:

   Replace both the thermal cut-off and high limit thermostat (see figure below). In addition, check for blocked or improper exhaust system and heat element malfunction.

High Limit Thermostat (L), Thermal Cut-Off (R)

## TEST #3c: Gas Valve

**(See page 4-12)**

## TEST #3d: Inline Thermal Fuse

### (Gas Dryer)

1. Unplug dryer or disconnect power.
2. Access the inline thermal fuse by removing the rear panel.
3. Using an ohmmeter, check the continuity from the red/white lead on the operating thermostat to the red/white lead on the high limit thermostat.
   - ➢ If the ohmmeter indicates an open circuit, replace the harness. The inline thermal fuse is not repairable.

### GAS DRYER HEATER CIRCUIT

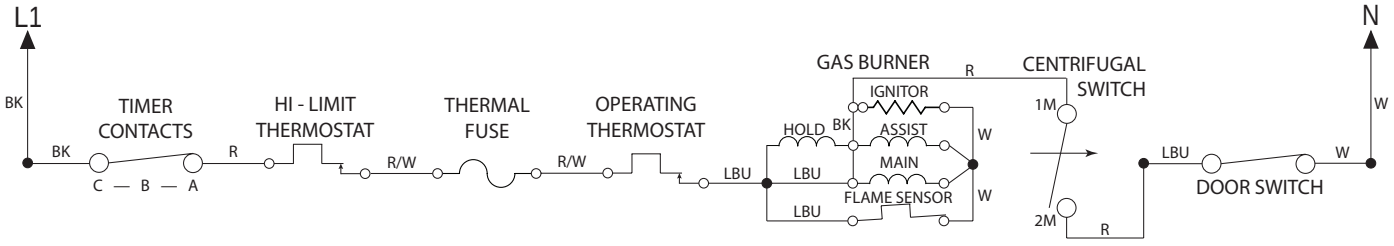



*Figure 2 - Gas Dryer Heater Circuit*

# For Service Technician Use Only

**⚠ DANGER**

**Electrical Shock Hazard**

**Only authorized technicians should perform diagnostic voltage measurements.**

**After performing voltage measurements, disconnect power before servicing.**

**Failure to follow these instructions can result in death or electrical shock.**

## TEST #3c: Gas Valve

### (Gas Dryer)

1. Unplug dryer or disconnect power.
2. Access the gas valve by removing the front access panel.
3. Use an ohmmeter to determine if a gas valve coil has malfunctioned. Remove harness plugs. Measure resistance across the terminals.

   Readings should match those shown in the following chart; if not, replace coils.

| GAS VALVE RESISTANCE | |
|---|---|
| **Terminals** | **Resistance in ohms** |
| 1 to 2 | 1400 ± 70 |
| 1 to 3 | 570 ± 28.5 |
| 4 to 5 | 1300 ± 65 |

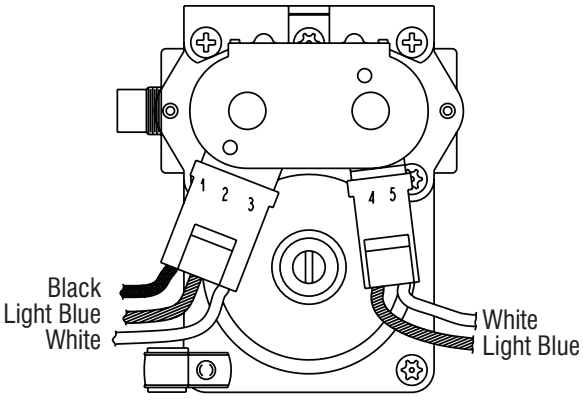



*Figure 1 - Gas Valve*

4. Disconnect the ignitor plug from the burner. Using an ohmmeter, measure the resistance across the ignitor's 2-pin connector. Resistance should be 50–500 Ω.
   - ➢ If resistance readings are outside the range or open, replace the ignitor.
   - ➢ If resistance readings are within range, reconnect the ignitor plug and continue to step 5.
5. Disconnect the wires going to the flame sensor terminals. Using an ohmmeter, measure across the two sensor terminals for continuity.
   - ➢ If there is continuity, reconnect the sensor wires.
   - ➢ If the reading is open, the flame sensor needs replacing.
6. Plug in dryer or reconnect power.
7. Run a high-temp **TIMED DRY** cycle of at least 2 minutes in duration.
8. Watch the ignitor for a couple of minutes. If the ignitor stays red hot and the gas does not come out and ignite, the flame sensor needs replacing.

   **NOTE**: If ignitor does not come on, line voltage may not be present at the gas burner. The motor centrifugal switch may be suspect.

### Gas Valve Schematic

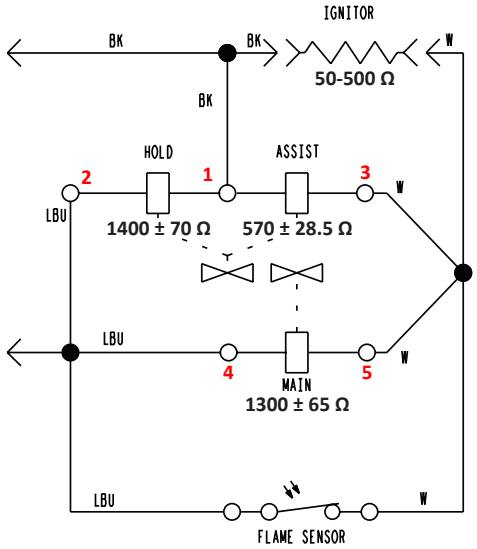



*Figure 2 - Gas Valve Schematic*

# For Service Technician Use Only

**⚠ WARNING**

**Electrical Shock Hazard**

**Disconnect power before servicing.**

**Replace all parts and panels before operating.**

**Failure to do so can result in death or electrical shock.**

## TEST #4: Moisture Sensor

### (long vent models only)

### Theory of Operation

The "C" version dryer control system consists of an electronic control board located in the console area and a moisture sensor attached to the lint screen grille inside the dryer drum. The dryer control system measures the resistance across the moisture sensor during the automatic dry cycle. The electronic control board turns power to the timer motor on and off based on input from the moisture sensor.

When a cycle is selected, Timer Contacts C - B will be closed. This applies 120 VAC through the orange/black wire to the electronic control board. Timer Contacts T - X will be open if the selected cycle is not a timed dry cycle, so there is no alternate path for current flow through the timer motor.

The electronic control looks at the input from the moisture sensor to see if the clothes are wet or dry. The moisture sensor will show continuity (short) if the clothes are wet and show NO continuity (open) if the clothes are dry.

If the clothes are wet, the Triac on the electronic control board will block power to the timer motor, and the timer motor will not advance.

If the clothes are dry or there are no clothes in the dryer the triac on the electronic control board will allow power to flow to the timer motor causing it to advance.

During the last 10 minutes of the Regular Cycle and any Timed Dry Cycle, Timer Contacts T - X will be closed. This will allow the timer motor to advance regardless of the condition at the moisture sensor. Timer Contacts T - X bypasses the electronic control.

### Test Procedure

This test is performed when an automatic cycle stops too soon, or runs much longer than expected.

**NOTE**: Overdrying may be caused by a short circuit in the sensor system.

1. Unplug dryer or disconnect power.
2. Access the sensor terminal by removing the front access panels. Disconnect the moisture sensor connector.
3. Access the C board moisture sensor connection by removing the C board. Check continuity between the C board harness moisture sensor connection (pin 3) and the moisture sensor connector.
   - ➢ If there is continuity, go to step 4.
   - ➢ If there is no continuity, replace the main harness.
4. Measure the resistance across the outermost contacts of the connector.
   - ➢ If a small resistance is measured, clean the two metal moisture strips inside the drum. If a small resistance is measured after cleaning, replace sensor harness.
   - ➢ If a small resistance is not measured, replace the C board.

**MOISTURE SENSOR CIRCUIT**

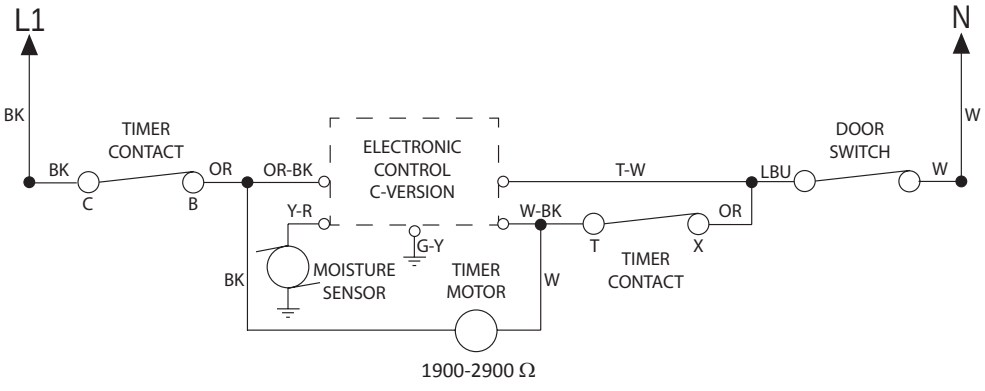



*Figure 1 - Moisture Sensor Strip Circuit*

5-Pin Connector

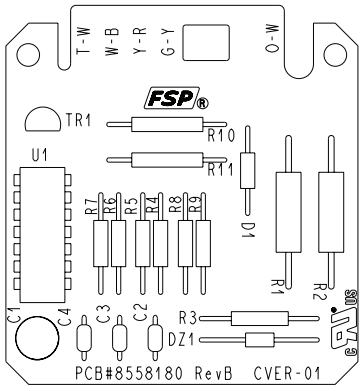



*Figure 2 - Electronic Control Brd*

# For Service Technician Use Only

**⚠ WARNING**

**Electrical Shock Hazard**

**Disconnect power before servicing.**

**Replace all parts and panels before operating.**

**Failure to do so can result in death or electrical shock.**

## TEST #5: Door Switch

1. Unplug dryer or disconnect power.
2. Check wire connections at the door switch and Start switch.
3. With the door closed, check continuity between the two outer pins on the door switch (see Figure 1).

***Figure 1 - Door Switch***

- If there is no continuity, replace the door switch.

4. Reassemble all parts and panels.
5. Plug in dryer or reconnect power.

# Note

Multimedia Enhanced

# Section 5: Component Access

This section provides service parts, assemblies, and component locations for the 27” Stacked Laundry Center.

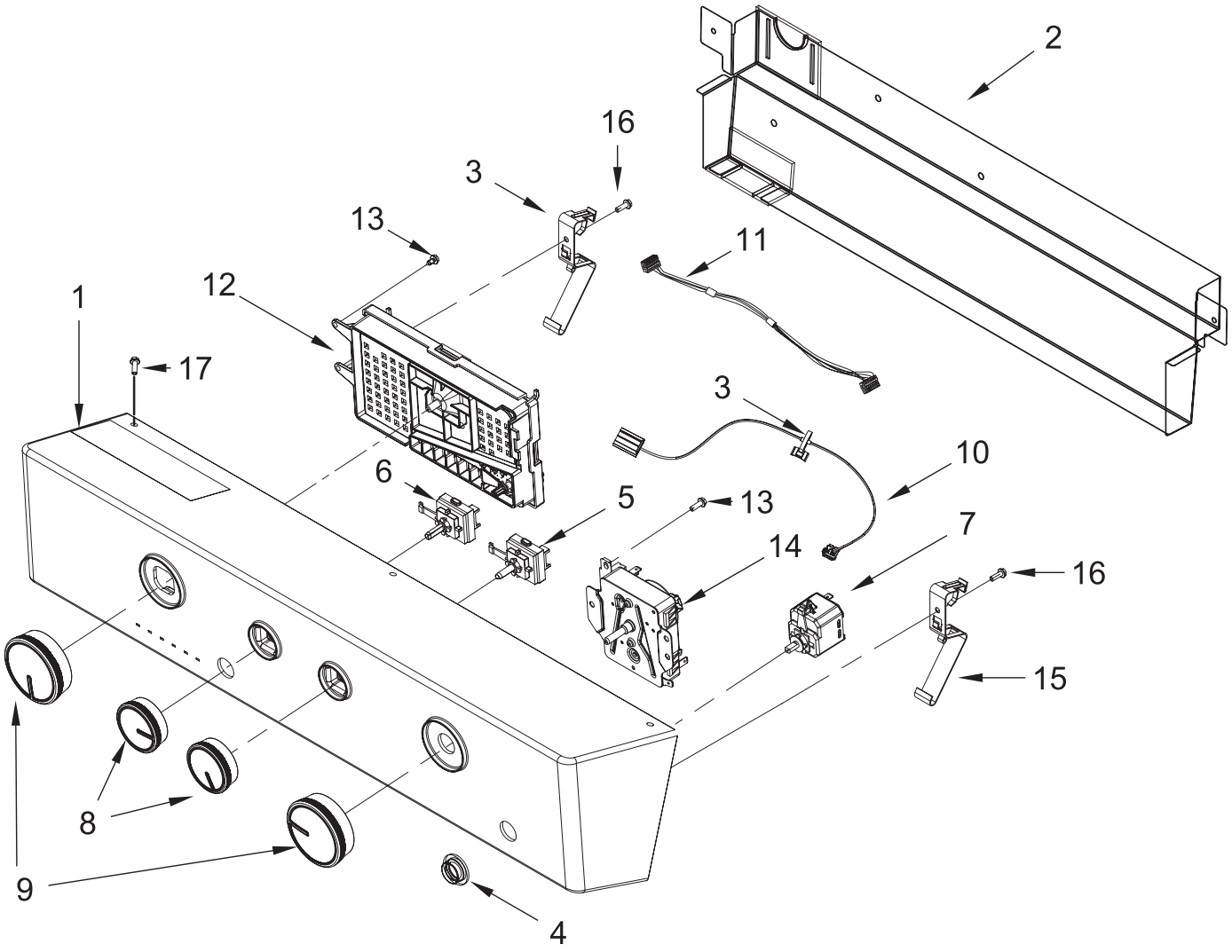
PARTS & ASSEMBLIES

- Washer/Dryer Control Panel Parts
- Dryer Support and Washer Harness Parts
- Dryer Front Panel and Door Parts
- Dryer Cabinet and Motor Parts
- Dryer Bulkhead Parts
- Washer Top and Cabinet Parts
- Washer Basket and Tub Parts
- Washer Gearcase, Motor and Pump Parts
- Component Locations - Console
- Component Locations - Washer Drive System & Drain Pump Locations
- Notes

Video Available Look for this ICON throughout Section 5.

# Parts & Assemblies

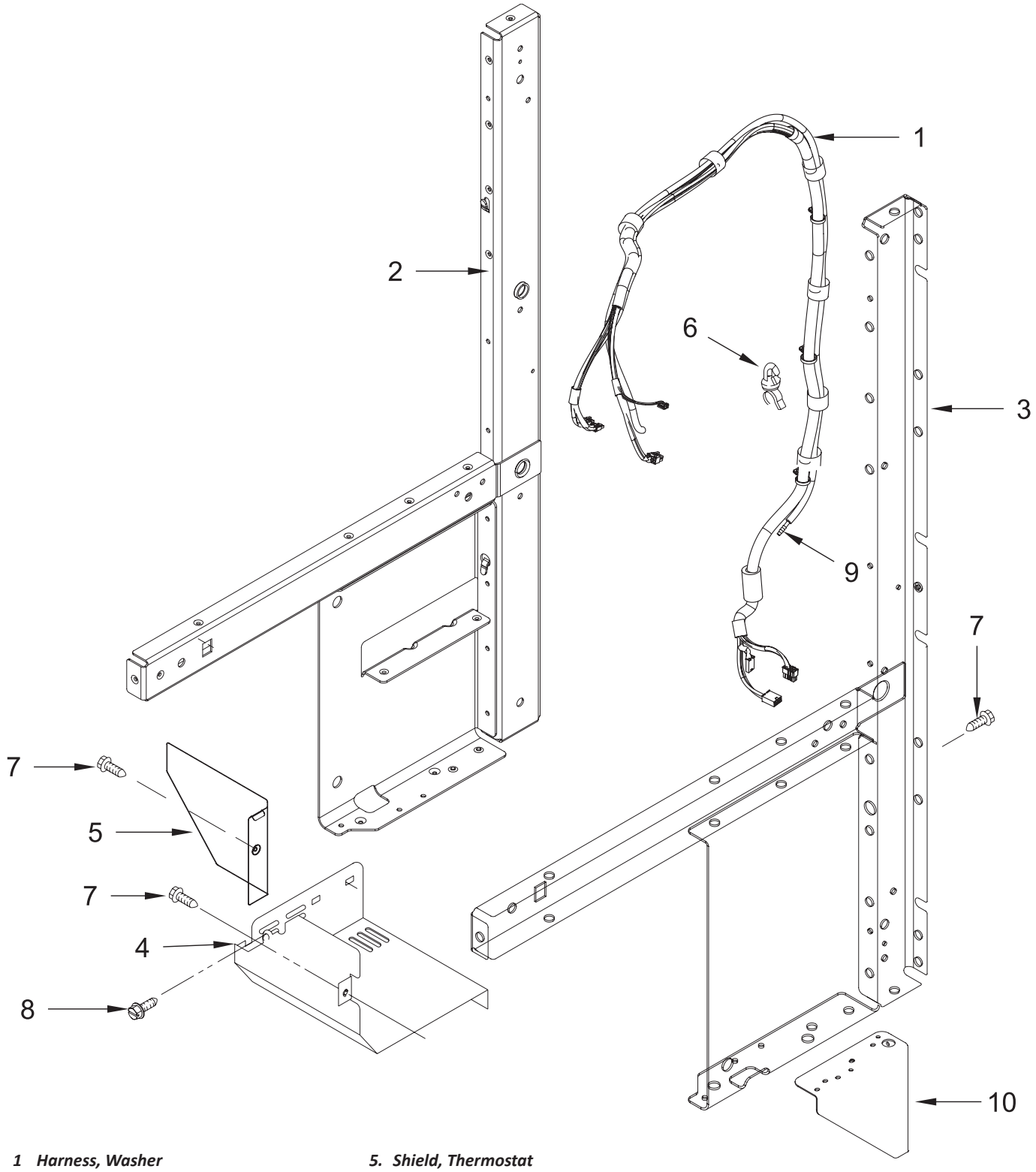
## WASHER/DRYER CONTROL PANEL PARTS




1. *Console*
2. *Shield, Console*
3. *Clip, Harness*
4. *Button*
5. *Switch, Rotary Encoder (5 Position)*
6. *Switch, Rotary Encoder (2 Position)*
7. *Switch, Push To Start*
8. *Knob Assembly, White Metallic*
9. *Knob Assembly, White Metallic*
10. *Harness, Wire*
11. *Harness, Jumper*
12. *Control Unit Assembly*
13. *Screw*
14. *Timer Assembly*
15. *Bracket Hinge*
16. *Screw*
17. *Screw*

# Parts & Assemblies

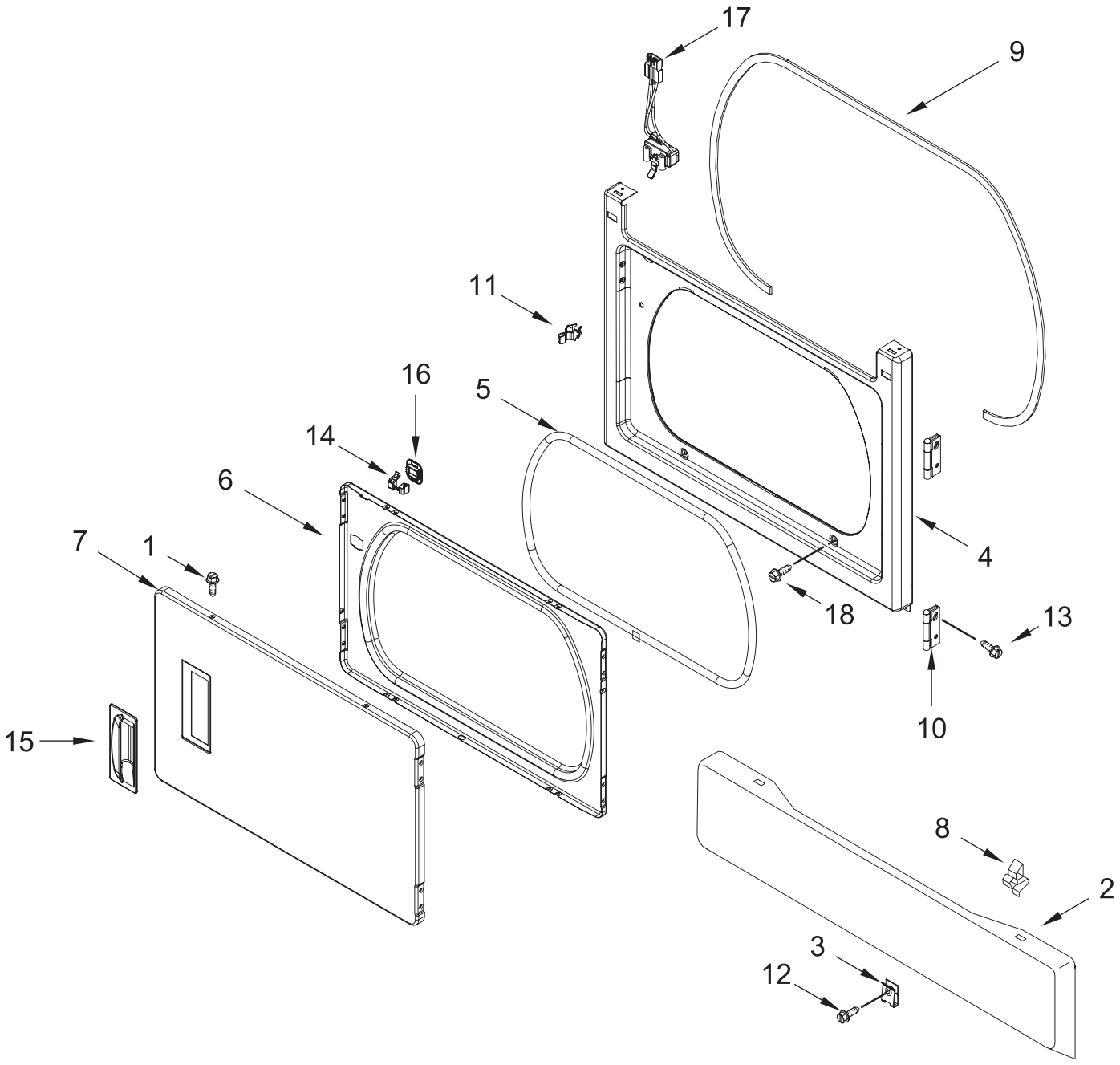
## DRYER SUPPORT AND WASHER HARNESS PARTS




1 *Harness, Washer*
2. *Assembly, Channel (Left)*
3. *Assembly, Channel (Right)*
4. *Shield, Front*
5. *Shield, Thermostat*
6. *Clip, Harness*
7. *Screw*
8. *Screw*
9. *Coupling, Pressure Hose*
10. *Bracket, Angle*

# Parts & Assemblies

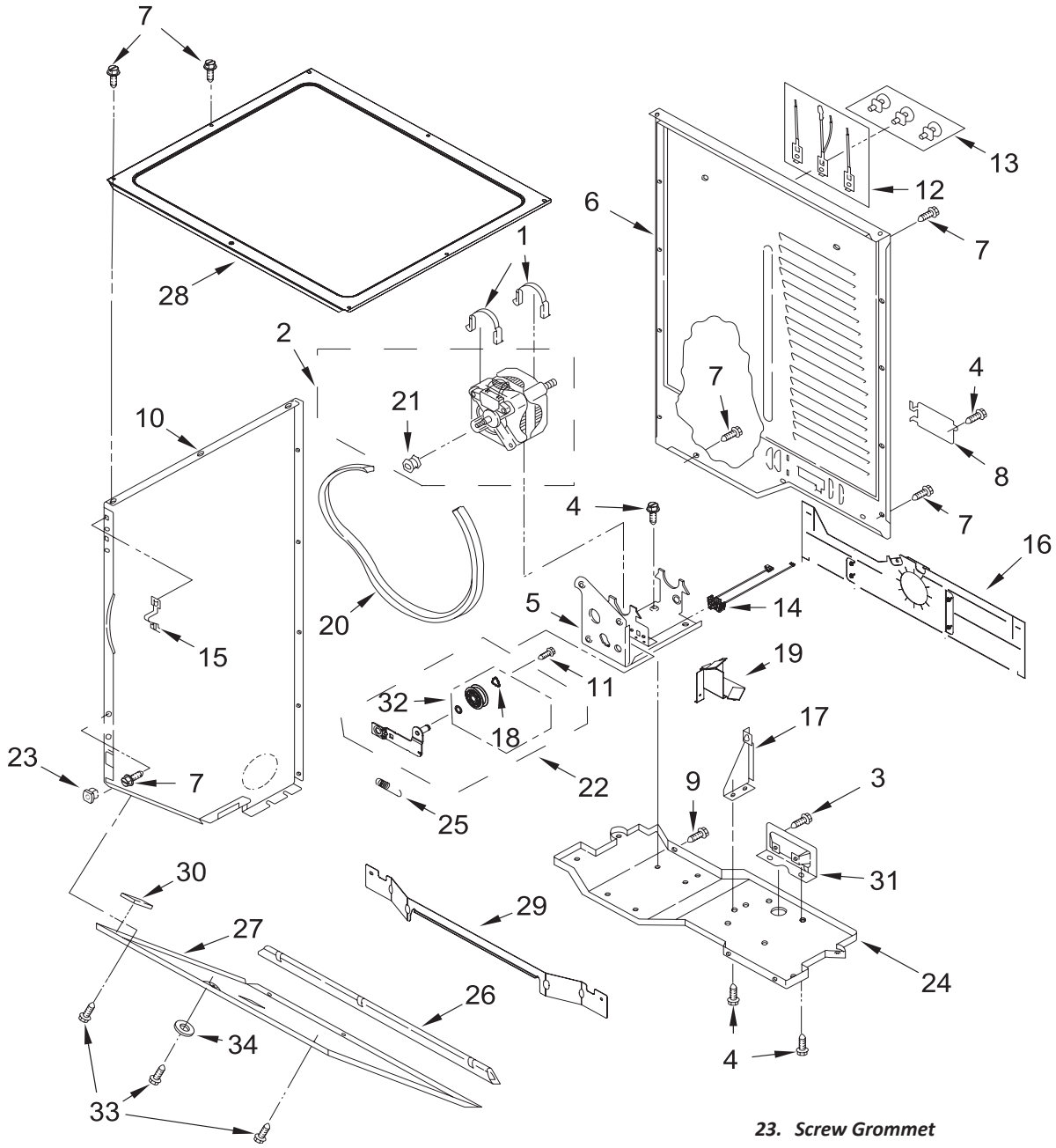
## DRYER FRONT PANEL AND DOOR PARTS




1. *Screw*
2. *Panel, Toe*
3. *Clip, Ground*
4. *Panel, Front*
5. *Seal, Door*
6. *Door, Rear*
7. *Door, Front*
8. *Retainer*
9. *Seal, Front Panel*
10. *Hinge, Spring Assembly*
11. *Strike, Door*
12. *Screw*
13. *Screw*
14. *Assembly, Door Catch*
15. *Handle, Door White*
16. *Bezel, Door Catch*
17. *Switch, Door*
18. *Screw*

# Parts & Assemblies

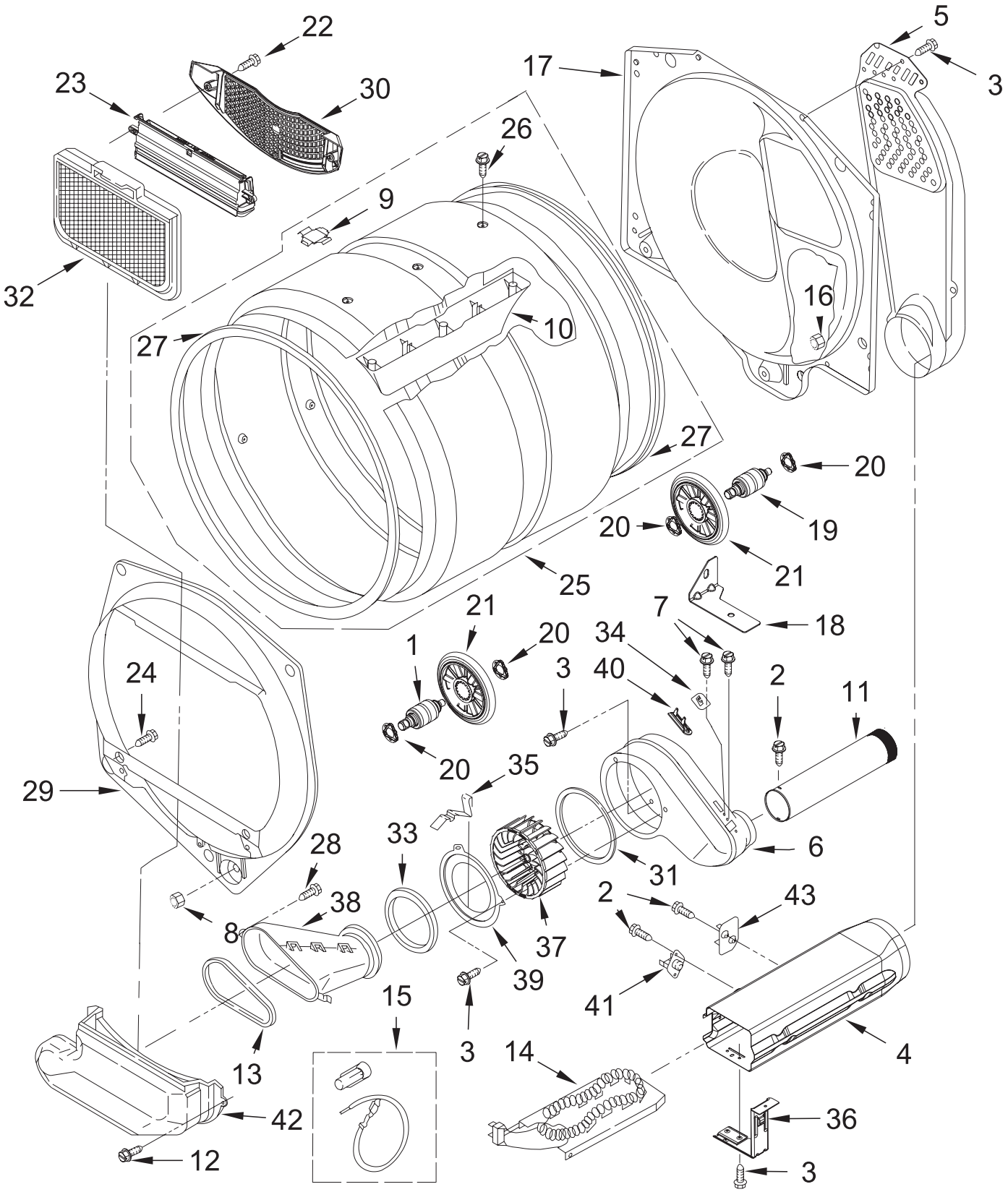
## DRYER CABINET AND MOTOR PARTS




1. *Clamp, Motor Mount*
2. *Motor, Main Drive*
3. *Screw*
4. *Screw*
5. *Bracket, Motor*
6. *Panel, Rear*
7. *Screw*
8. *Bracket, Terminal Block*
9. *Screw*
10. *Panel, Side White*
11. *Screw*
12. *Terminal*
13. *Screw Kit, Terminal Block*
14. *Switch, Broken Belt*
15. *Clip, Front Panel*
16. *Panel, Back Assembly*
17. *Bracket, Bulkhead*
18. *Washer, Tri Ring*
19. *Bracket, Roller Assembly*
20. *Belt, Drive*
21. *Pulley, Motor*
22. *Idler and Pulley Assembly*
23. *Screw Grommet*
24. *Base, Dryer*
25. *Spring, Idler*
26. *Cove, Transition Panel*
27. *Panel, Transition*
28. *Top, Dryer*
29. *Bracket*
30. *Spacer, Toe Panel*
31. *Bracket, Terminal Block*
32. *Assembly, Pulley*
33. *Screw*
34. *Magnet, Lid Catch*

# Parts & Assemblies

**DRYER BULKHEAD PARTS (See Part Description on page 5-7)**



# Parts & Assemblies

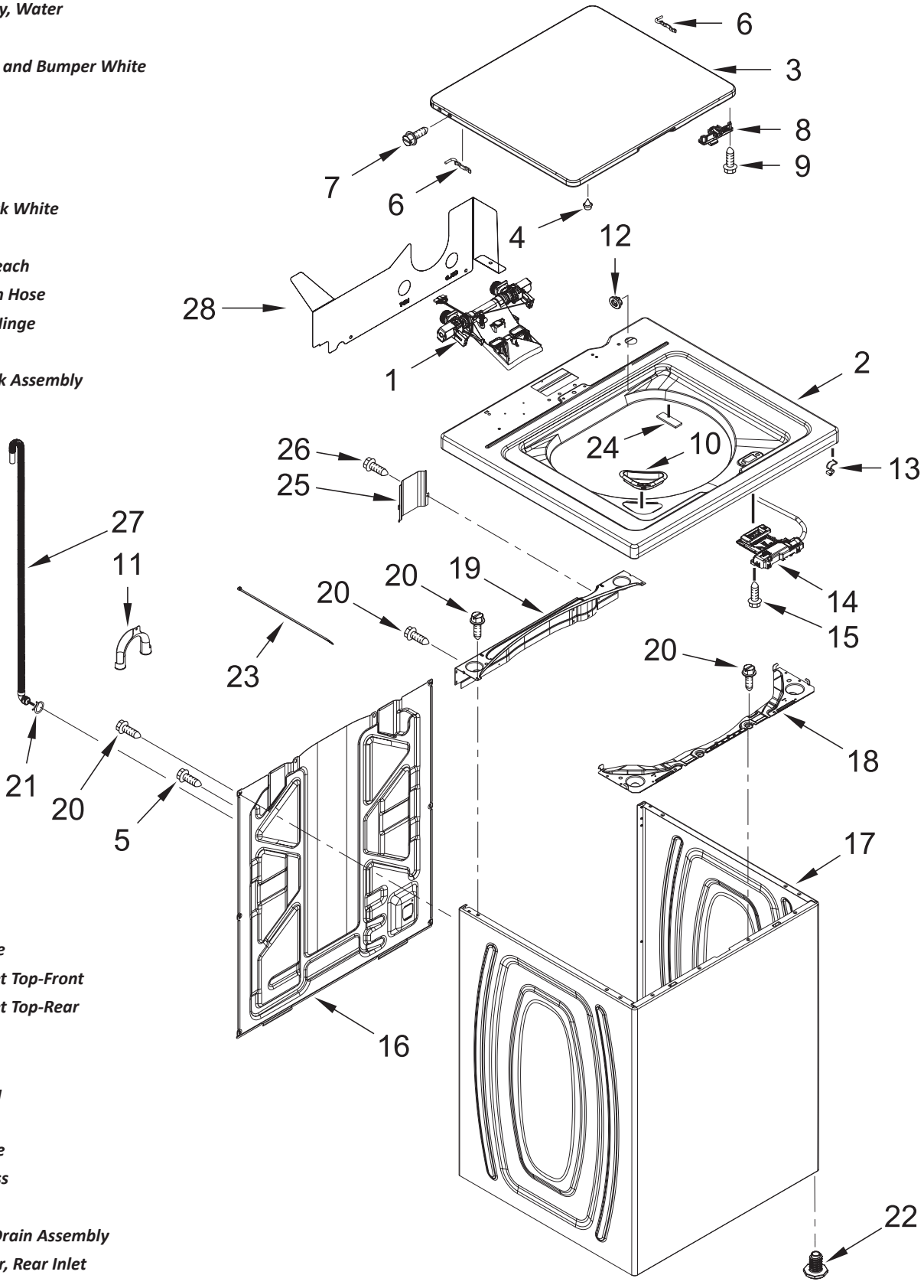
## DRYER BULKHEAD PARTS (See Part Diagram on page 5-6)

1 *Shaft, Drum Roller - Right Hand Thread*
2. *Screw*
3. *Screw*
4. *Box, Heater*
5. *Assembly, Air Duct*
6. *Housing, Blower*
7. *Screw*
8. *Nut, Hex*
9. *Plug, Drum Hole*
10. *Baffle, Drum*
11. *Pipe, Exhaust*
12. *Screw*
13. *Seal, Transition Duct to Lint Duct*
14. *Element, Heater*
15. *Terminal Wire Kit (For Heater Element Wiring Harness Repair)*
16. *Nut, Hex (Left Hand Thread)*
17. *Bulkhead, Rear*
18. *Bracket, Blower*
19. *Shaft, Drum Roller-Left Hand Thread*
20. *Washer, Tri Ring*
21. *Roller, Support*
22. *Screw*
23. *Assembly, Outlet Housing*
24. *Screw*
25. *Assembly, Drum*
26. *Screw*
27. *Seal, Drum Front*
28. *Screw*
29. *Bulkhead, Front*
30. *Grill, Outlet*
31. *Seal, Plate Cover*
32. *Screen, Lint*
33. *Seal, Transition Duct*
34. *Thermostat*
35. *Clip, Duct Locator*
36. *Bracket, Heater Box*
37. *Wheel, Blower*
38. *Duct, Transition*
39. *Cover Plate, Blower*
40. *Fuse, Thermal (91C)*
41. *Thermostat*
42. *Lint Duct Assembly*
43. *Kit, Thermal Cut-Off (Includes Thermostat)*

# Parts & Assemblies

## WASHER TOP AND CABINET PARTS

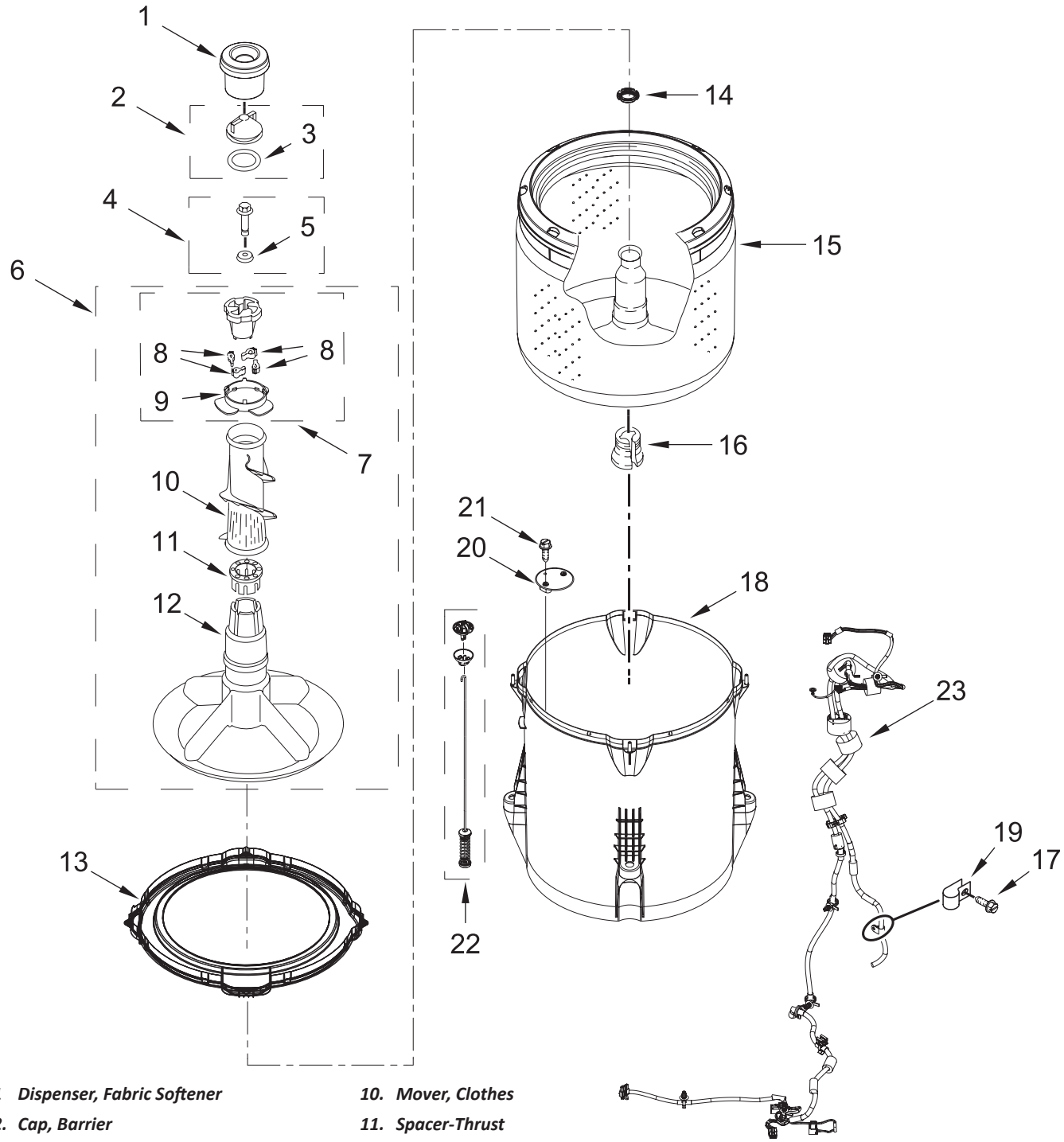
1. *Inlet Assembly, Water*
2. *Top White*
3. *Assembly, Lid and Bumper White*
4. *Bumper*
5. *Screw*
6. *Hinge, Lid*
7. *Screw*
8. *Strike, Lid Lock White*
9. *Screw*
10. *Dispenser, Bleach*
11. *U-Bend, Drain Hose*
12. *Bearing, Lid Hinge*
13. *Clip, Harness*
14. *Latch, Lid Lock Assembly*




15. *Screw*
16. *Panel, Rear*
17. *Cabinet White*
18. *Brace, Cabinet Top-Front*
19. *Brace, Cabinet Top-Rear*
20. *Screw*
21. *Clamp, Hose*
22. *Foot, Leveling*
23. *Tie, Cable*
24. *Pad, Lid Hinge*
25. *Cover, Harness*
26. *Screw*
27. *Hose, Outer Drain Assembly*
28. *Harness Cover, Rear Inlet*

# Parts & Assemblies

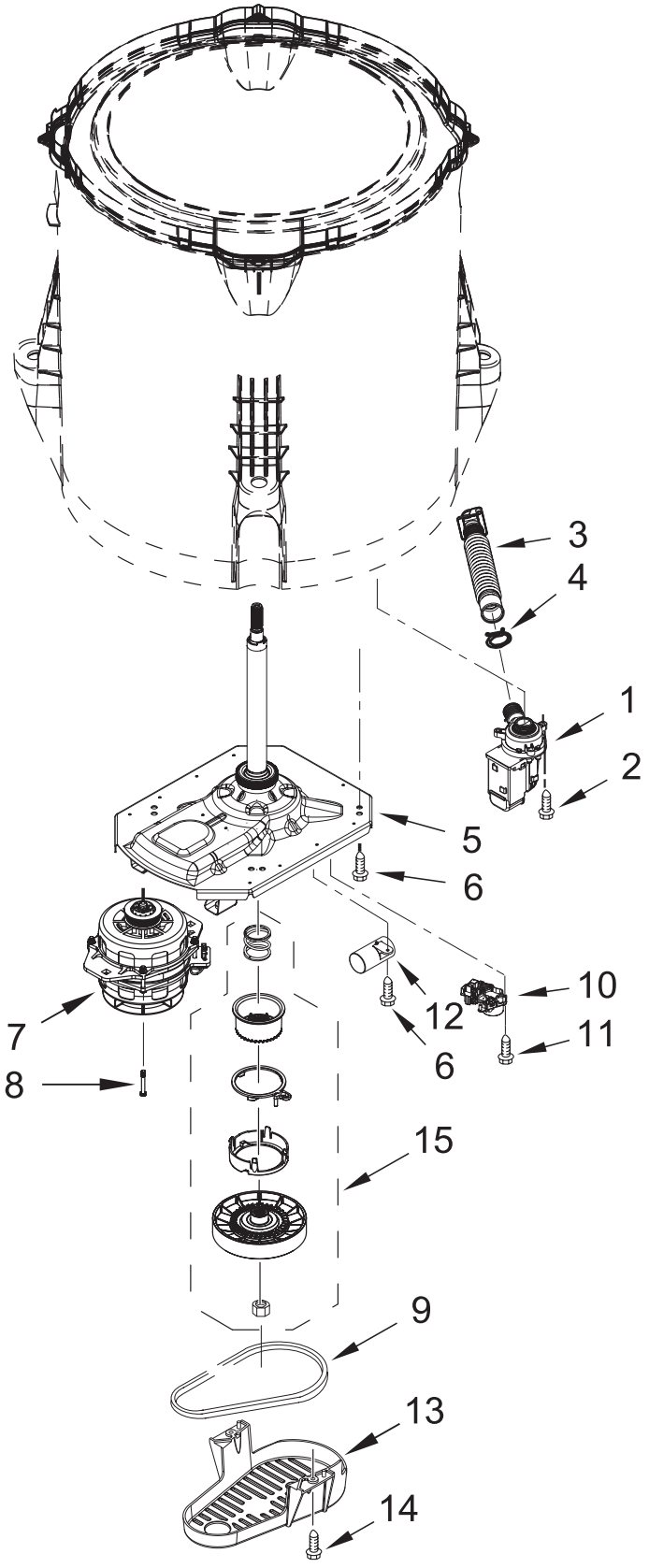
## WASHER BASKET AND TUB PARTS




1. *Dispenser, Fabric Softener*
2. *Cap, Barrier*
3. *Seal, Inner Cap*
4. *Screw and Washer*
5. *Washer*
6. *Agitator (Complete)*
7. *Cam, Driven*
8. *Dog, Agitator Clutch*
9. *Bearing, Cam*
10. *Mover, Clothes*
11. *Spacer-Thrust*
12. *Agitator*
13. *Ring, Tub*
14. *Nut, Spanner*
15. *Basket Assembly*
16. *Block, Basket Drive*
17. *Screw*
18. *Tub*
19. *Clamp, Cable*
20. *Filter, Drain Pump*
21. *Screw*
22. *Damper Ass'y, Tub Suspension (Set of 4-Includes Suspension Bushings and Balls.)*
23. *Harness, Lower*

# Parts & Assemblies

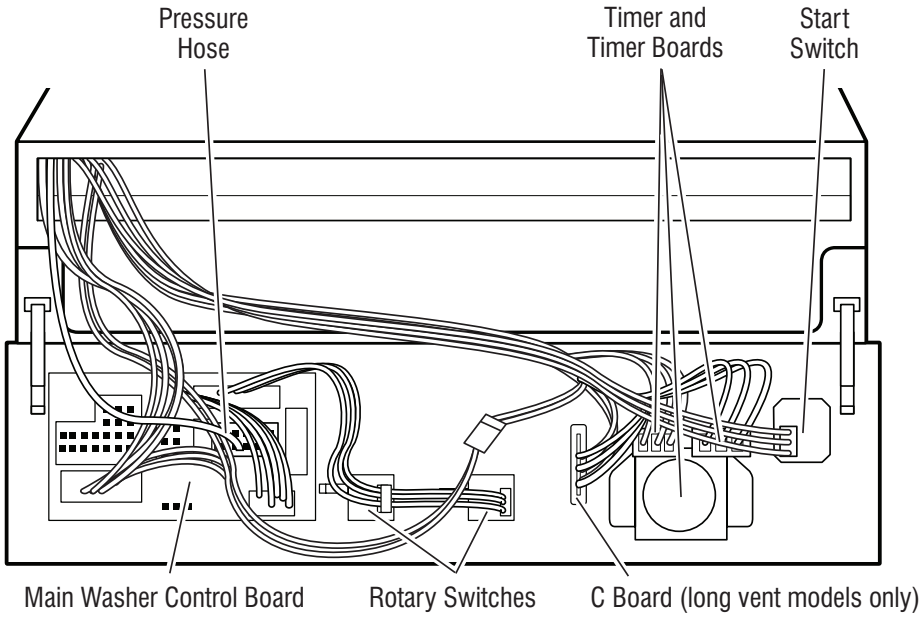
## WASHER GEARCASE, MOTOR AND PUMP PARTS



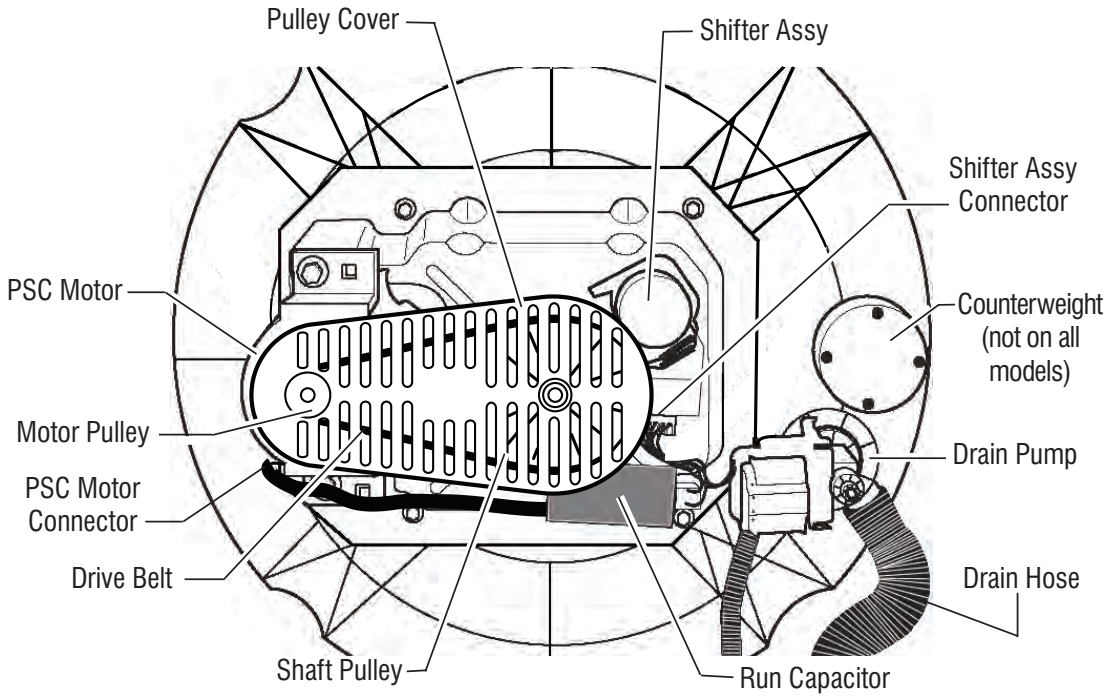

1. *Pump Assembly, Drain*
2. *Screw*
3. *Hose, Inner Drain Assembly*
4. *Clamp, Hose*
5. *Gearcase Assembly*
6. *Screw*
7. *Motor, Drive*
8. *Screw*
9. *Belt, Drive*
10. *Actuator-Shift*
11. *Screw*
12. *Capacitor, Motor Run*
13. *Shield, Pulley Cover*
14. *Screw*
15. *Splutch Kit (60Hz)*

# Component Locations

## Console Components




## Washer Drive System & Drain Pump Locations



# Accessing the Console Components

**⚠ WARNING**

**Electrical Shock Hazard**

**Disconnect power before servicing.**

**Replace all parts and panels before operating.**

**Failure to do so can result in death or electrical shock.**

### To Access the Console Components

1. Unplug dryer or disconnect power.
2. Use a 1/4” driver to remove the three (3) hex head screws securing the console to the top front panel (see Figure 1).
3. Pull console forward and rotate downward. Console will hang on the bracket hinges. See Figure 2.

*Figure 1*

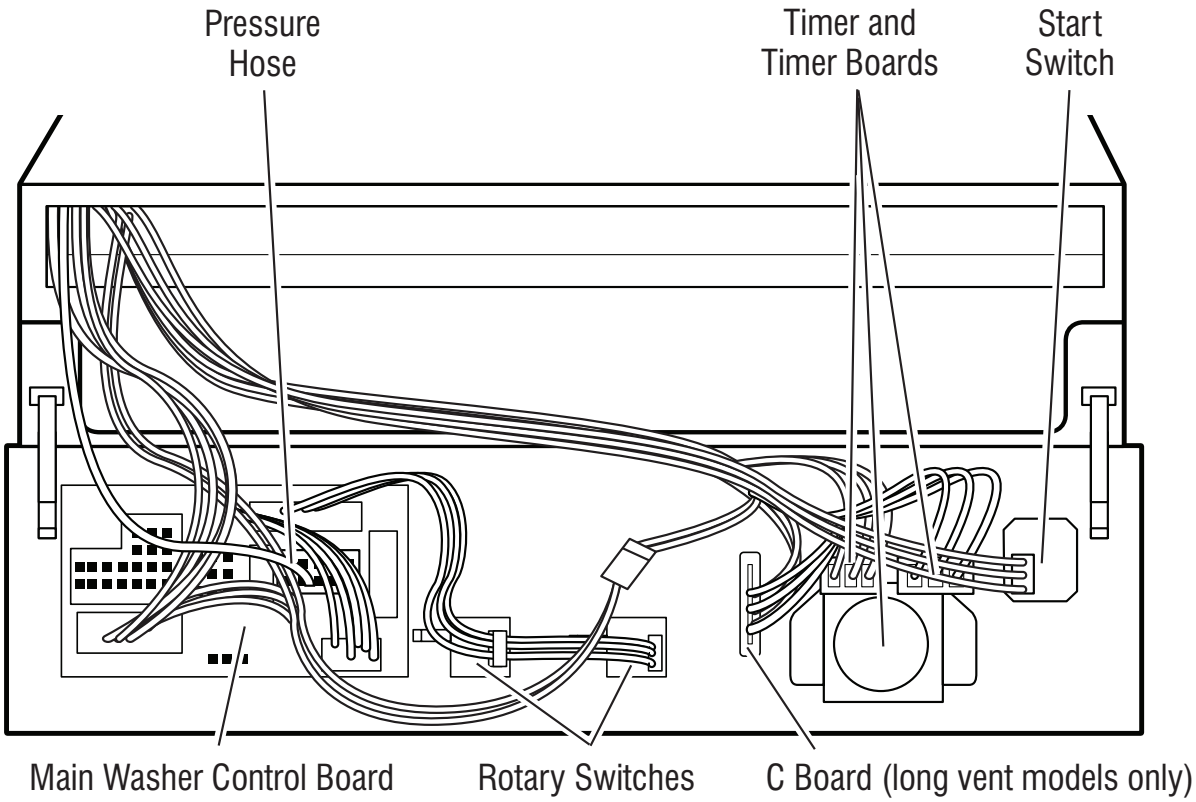



*Figure 2 - Console Assembly Components*

# Removing the Transition Panel

**⚠ WARNING**

**Electrical Shock Hazard**

**Disconnect power before servicing.**

**Replace all parts and panels before operating.**

**Failure to do so can result in death or electrical shock.**

## To Remove the Transition Panel

1. Unplug dryer or disconnect power.
2. Use a Phillips screwdriver to remove the right and left screws and loosen the center screw used to secure the transition panel to cabinet (see Figure 1).

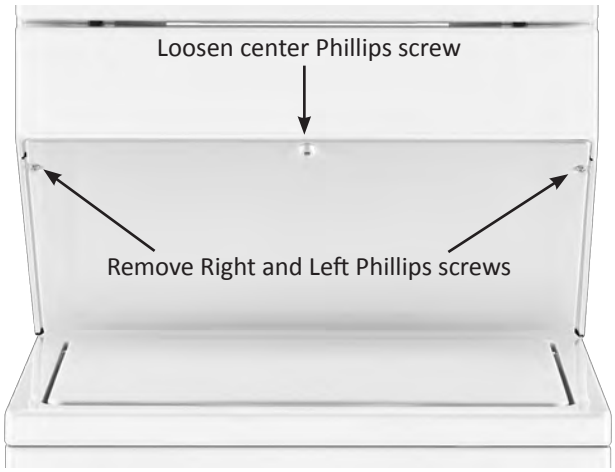



***Figure 1***

3. Lower transition panel and remove from cabinet.

# Removing the Dryer Assembly

**⚠ WARNING**

**Electrical Shock Hazard**

**Disconnect power before servicing.**

**Replace all parts and panels before operating.**

**Failure to do so can result in death or electrical shock.**

**⚠ WARNING**

**Excessive Weight Hazard**

**Use two or more people to move and install washer/dryer.**

**Failure to do so can result in back or other injury.**

## To Remove the Dryer Assembly

1. Unplug dryer or disconnect power.
2. Turn off water supply to washer.
3. Disconnect hot and cold inlet water hoses and dryer vent.
4. If stacked laundry center is a gas unit:
   a. Turn off gas valve.
   b. Disconnect gas supply line.
5. **Remove Rear Dryer Panel.** Use a 5/16” driver to remove the (9) hex head screws securing the dryer rear panel to the dryer cabinet and three screws from the top. See Figure 1.

***Figure 1***

6. Use a 5/16” driver or socket to remove the three screws securing the “Rear Inlet Harness Cover” to the washer top panel. Remove cover and set aside. See Figure 2.

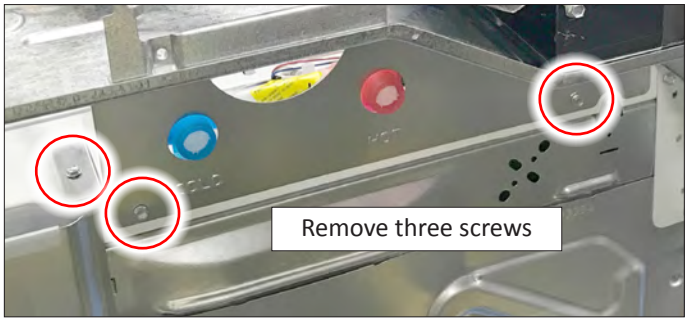



***Figure 2***

*Continued on next page . . .*

# Removing the Dryer Assembly (continued)

7. Locate the pressure hose disconnect inside the cabinet, to the right of the motor (see Figure 3). Disconnect hose fitting and pull hose down through opening in dryer base.

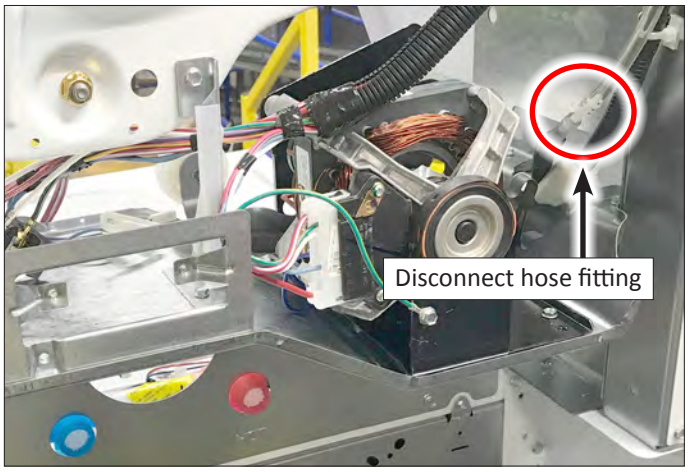



*Figure 3*

8. Disconnect the three harness connectors to the right of the water inlet valve assembly (Water Valve/Lid Switch/ Motor & Shifter Harnesses). See Figure 4.

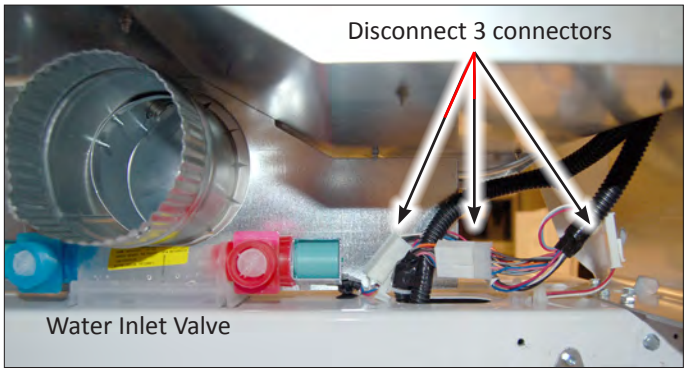



*Figure 4*

9. Use a Phillips screwdriver to remove three screws securing the center transition panel to cabinet (see Figure 5).

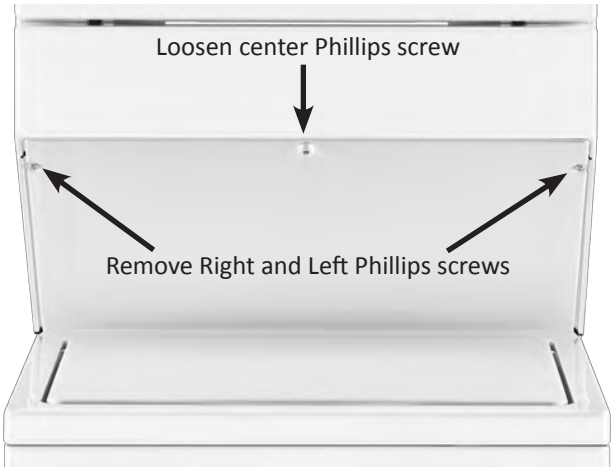



*Figure 5*

10. Lower transition panel and remove from cabinet.
11. From the front of the unit, remove one (1) screw per side attaching dryer support frame to the washer top.

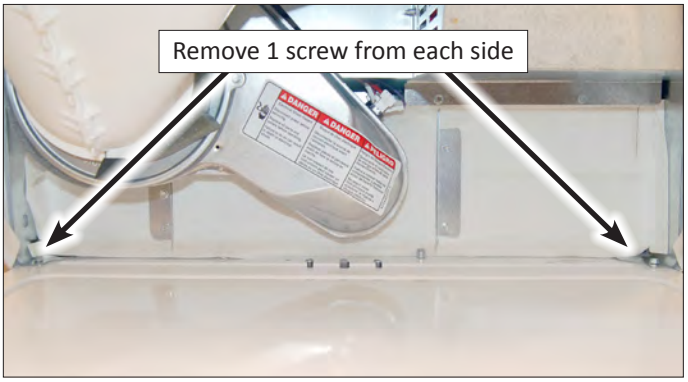



*Figure 6*

**IMPORTANT: The following steps must be performed by two (2) people.**

12. With two people, one removing screws and the other supporting the dryer. From the back, remove three (3) 5/16” screws per side attaching dryer to washer top. See Figure 7.

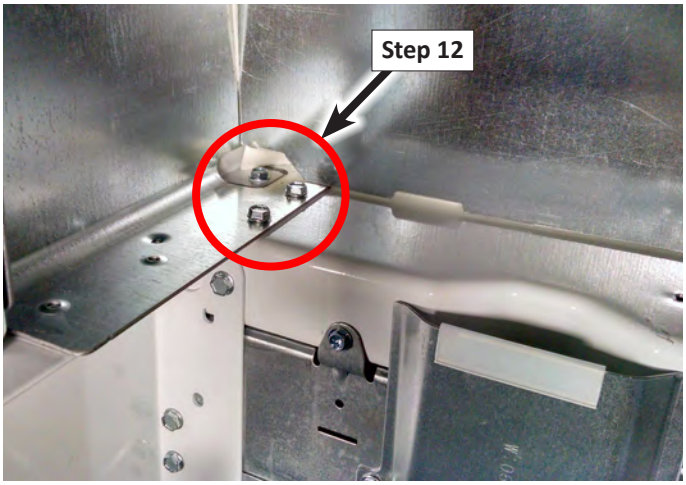



*Figure 7*

13. Remove one 5/16” screw per side attaching dryer to triangle bracket. See Figure 8.

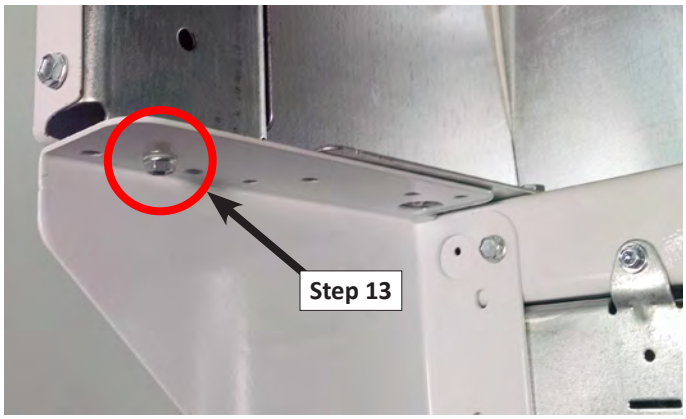



*Figure 8*

# Removing the Dryer Assembly (continued)

**14.** With two people, lift up dryer and separate from the washer (see Figure 9). The dryer can be set on the ground in the orientation shown below (see Figure 10).

*Figure 9 - Lift Dryer Up and Off*

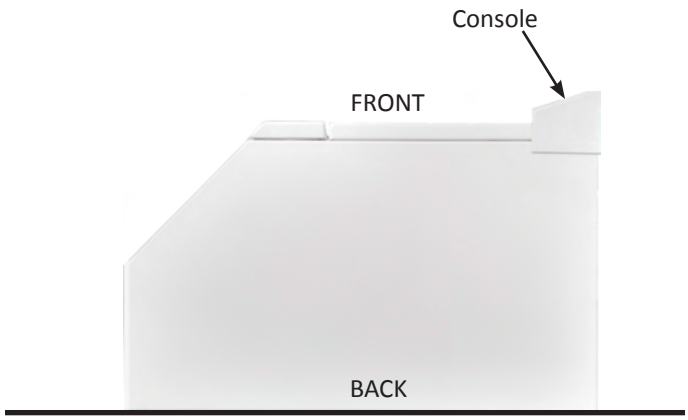



*Figure 10 - Set Dryer on Back*

# Reassembling the Dryer Assembly

**⚠ WARNING**

**Electrical Shock Hazard**

**Disconnect power before servicing.**

**Replace all parts and panels before operating.**

**Failure to do so can result in death or electrical shock.**

**⚠ WARNING**

**Excessive Weight Hazard**

**Use two or more people to move and install washer/dryer.**

**Failure to do so can result in back or other injury.**

## To Reassemble the Dryer Assembly

**IMPORTANT: The following steps must be performed by two (2) people.**

1. With two people, place dryer assembly on the washer and dryer supports.

**IMPORTANT:**

- With two people, lift up dryer assembly over the washer—high enough to clear the water valve assembly. See Figures 1 & 2.
- When placing the dryer assembly on the washer, first align the back of the dryer with the second hole on the dryer support. See Figures 1 & 2.
  **NOTE:** Make sure the intermediate harnesses do not get pinched when placing the dryer on the washer.
- Slide dryer slowly back until the two location "detents" on the bottom of the dryer align with the two holes on the washer and dryer supports. See Figures 1 & 2.
- Thermal shield must be in front of water valve assembly and behind the locating screw. **NOTE:** One installer may need to tip the dryer *slightly* for the other to "push" the shield over the screw.
- If disconnected, reconnect harness to water valve.

2. With two people, one installing screws and the other supporting the dryer, install one 5/16" screw per side attaching dryer to triangle bracket. See Figure 8, page 5-15.
3. Next, install the remaining four (4) 5/16" screws per side attaching dryer to washer. See Figures 6 & 7, page 5-15.
4. Reconnect the three harness connectors to the right of the water inlet valve assembly (Water Valve/Lid Switch/ Motor & Shifter Harnesses). See Figure 4, page 5-15.
5. Reconnect the pressure hose. See Figures 3, page 5-15.
6. Replace all remaining parts and panels.

*Figure 1 - Washer Top View*

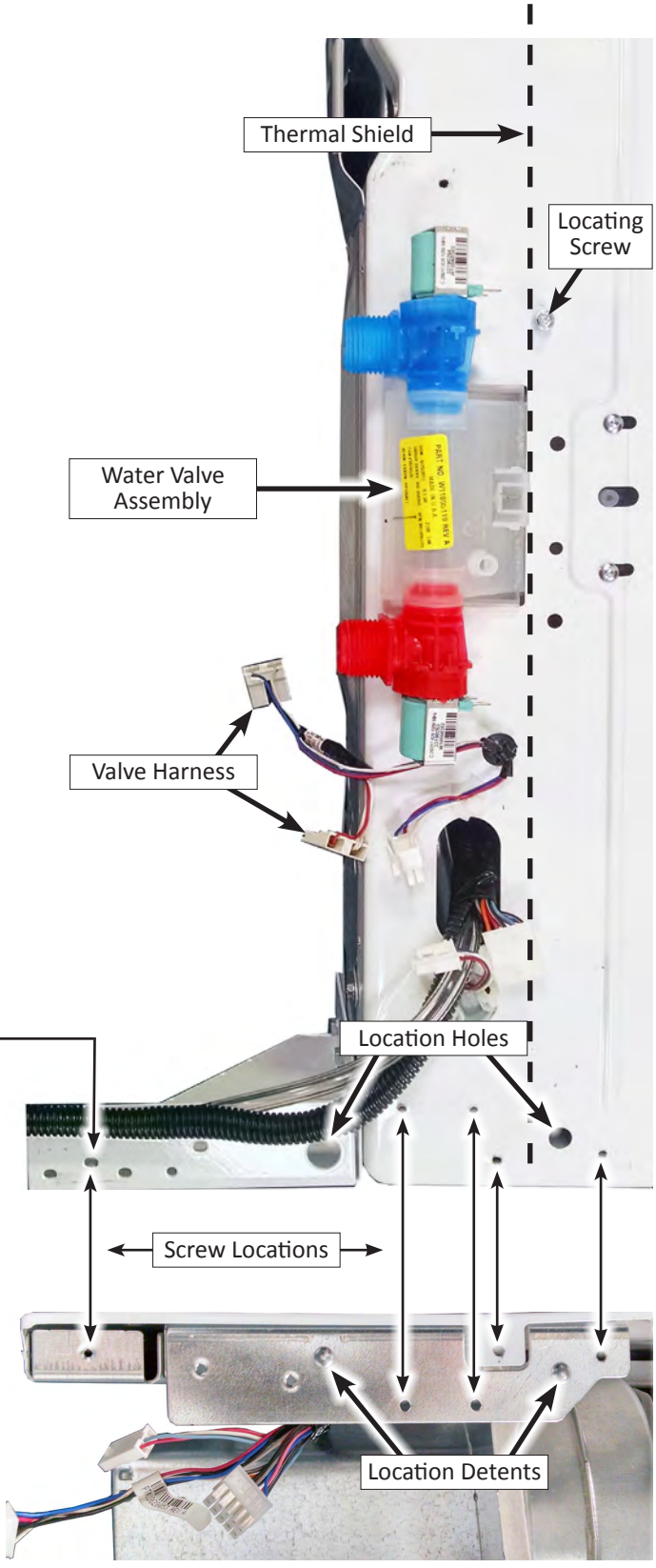



*Figure 2 - Dryer Bottom View (one side)*

# Removing the Dryer Rear Panel

**⚠ WARNING**

**Electrical Shock Hazard**

**Disconnect power before servicing.**

**Replace all parts and panels before operating.**

**Failure to do so can result in death or electrical shock.**

## To Remove the Dryer Rear Panel

1. Unplug dryer or disconnect power.
2. Turn off water supply to washer.
3. Disconnect hot and cold inlet water hoses and dryer vent.
4. If stacked laundry center is a gas unit:
   a. Turn off gas valve.
   b. Disconnect gas supply line.
5. **Remove Rear Dryer Panel.** Use a 5/16” driver to remove the (9) hex head screws securing the dryer rear panel to the dryer cabinet and three screws from the top. See Figure 1.

*Figure 1*

# Removing the Washer Rear Panel

**⚠ WARNING**

**Electrical Shock Hazard**

**Disconnect power before servicing.**

**Replace all parts and panels before operating.**

**Failure to do so can result in death or electrical shock.**

## To Remove the Washer Rear Panel

1. Unplug dryer or disconnect power.
2. Perform the procedures on page 5-14, "Removing the Dryer Assembly" prior to performing the following steps.
3. **Remove Support Brackets.** Use a 5/16" driver to remove the four (4) hex head screws indicated in Figure 1 to disassemble the angle support bracket from the back of the washer.

   **IMPORTANT**: To prevent damage to frame, do NOT remove dryer support brackets with the dryer assembly installed.

*Figure 1 - Support Bracket Screws*

4. Remove screw holding drain hose to rear panel. Use a flat bladed screwdriver to unclip the drain hose bracket from the rear panel. See arrow in Figure 1.
5. **Remove Washer Rear Panel.** Use a 5/16" driver to remove the six (6) hex head screws indicated in Figure 2, securing rear panel to washer cabinet.

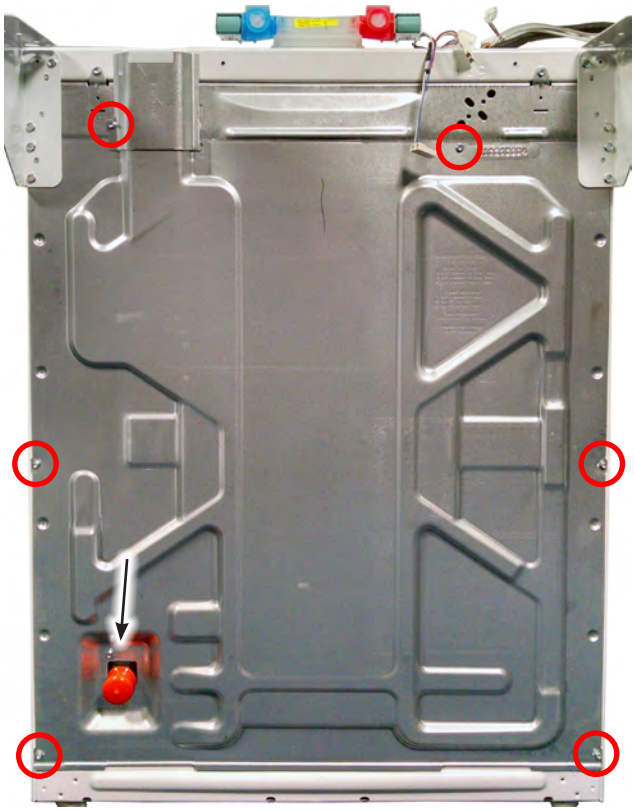


*Figure 2*

6. Remove rear panel and set aside.

# Notes

# PRODUCT SPECIFICATIONS & WARRANTY INFORMATION SOURCES

## *IN THE UNITED STATES:*

**FOR PRODUCT SPECIFICATIONS AND WARRANTY INFORMATION CALL:**

FOR WHIRLPOOL PRODUCTS: 1-800-253-1301

**FOR TECHNICAL ASSISTANCE WHILE AT THE CUSTOMER'S HOME CALL:**

THE TECHNICAL ASSISTANCE LINE: 1-800-832-7174

**HAVE YOUR STORE NUMBER READY TO IDENTIFY YOU AS AN AUTHORIZED IN-HOME SERVICE PROFESSIONAL**

**FOR LITERATURE ORDERS (CUSTOMER EXPERIENCE CENTER):**

PHONE: 1-800-851-4605

**FOR TECHNICAL INFORMATION AND SERVICE POINTERS:**

www.servicematters.com

## *IN CANADA:*

**FOR PRODUCT SPECIFICATIONS AND WARRANTY INFORMATION CALL**

PHONE: 1-800-461-5681

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